This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

BOSTON
MEDICAL LIBRARY

IN THE
Francis A. Countway
Library of Medicine
BOSTON

21195

THE TRANSACTIONS

OF THE

EDINBURGH OBSTETRICAL SOCIETY

THE TRANSACTIONS

OF THE

EDINBURGH OBSTETRICAL SOCIETY.

VOL. XXXI.

SESSION 1905-1906.

EDINBURGH: OLIVER AND BOYD,
PUBLISHERS TO THE SOCIETY.
1906.

BOSTON MEDICAL
NOV 17 1906
LIBRARY.

PRINTED BY OLIVER AND BOYD, TWEEDDALE COURT, EDINBURGH.

CATALOGUED
NOV 17 1906
E. H. B.

PREFACE.

THIS, the thirty-first volume of the Society's Transactions, contains a record of its proceedings during the Session 1905–1906.

In it, as in former volumes, the views brought forward in the Papers are to be considered as those of the writers themselves, and not as those of the Society as a body.

THE EDITOR.

October 1906.

EDINBURGH OBSTETRICAL SOCIETY.

OFFICE-BEARERS FOR SESSION 1905-1906.

President.

JOHN WILLIAM BALLANTYNE, M.D., F.R.C.P.Ed.

Vice-Presidents.

PROFESSOR SIR JOHN HALLIDAY CROOM, M.D., F.R.C.S.Ed., F.R.C.P.Ed.
DAVID BERRY HART, M.D., F.R.C.P.Ed.

Treasurer.

WILLIAM CRAIG, M.D., F.R.C.S.Ed., 71 Bruntsfield Place.

Secretaries.

JAMES LAMOND LACKIE, M.D., F.R.C.P.Ed., 1 Randolph Crescent.
GEORGE FREELAND BARBOUR SIMPSON, M.D., F.R.C.S.Ed., F.R.C.P.Ed., 50 Melville Street.

Librarian.

FRANCIS WILLIAM NICOL HAULTAIN, M.D., F.R.C.P.Ed., 12 Charlotte Square.

Editor of Transactions.

ANGUS MACDONALD, M.B., F.R.C.S.Ed., 9 Rutland Square.

Members of Council.

EMERITUS PROFESSOR SIR ALEXANDER RUSSELL SIMPSON, LL.D., M.D., F.R.C.P.Ed.
THOMAS WOOD, M.D., C.M., Leith.
WILLIAM FORDYCE, M.D., F.R.C.P.Ed.
HARRY OLIPHANT NICHOLSON, M.D., F.R.C.P.Ed.
ALEXANDER HUGH FREELAND BARBOUR, M.D., F.R.C.P.Ed
NATHANIEL THOMAS BREWIS, M.D., F.R.C.P.Ed., F.R.C.S.Ed.
JAMES HAIG FERGUSON, M.D., F.R.C.P.Ed., F.R.C.S.Ed., M.R.C.S. Eng.
JOHN MARTIN MUNRO KERR, M.B.C.M., Glasgow.

List of Presidents, Vice-Presidents, Treasurers, Secretaries, and Librarians of the Society.

PRESIDENTS.

	Year.		Year.
Dr William Beilby,	1840–41	Sir A. R. Simpson,	1882–83
Sir James Y. Simpson, Bart.,	1842–57	Dr John Connel,	1884–85
Dr John Moir,	1858–59	Sir J. Halliday Croom,	1886–87
Dr Alex. Keiller,	1860–61	Dr C. E. Underhill,	1888–89
Dr T. H. Pattison,	1862–63	Dr D. Berry Hart,	1890–91
Dr T. Graham Weir,	1864–65	Sir A. R. Simpson,	1892–93
Sir James Y. Simpson, Bart.,	1866–67	Dr A. H. Freeland Barbour,	1894–95
Dr John Burn,	1868–69	Dr Alexander Ballantyne,	1896–97
Dr Charles Bell,	1870–71	Sir J. Halliday Croom,	1898–99
Dr L. R. Thomson,	1872–73	Dr R. Milne Murray,	1900–01
Dr Matthews Duncan,	1874–75	Dr James Ritchie,	1902–03
Sir A. R. Simpson,	1876–77	Dr N. T. Brewis,	1904–05
Dr David Wilson,	1878–79	Dr J. W. Ballantyne,	1906
Dr Angus Macdonald,	1880–81		

VICE-PRESIDENTS.

	Year.		Year.
Sir J. Y. Simpson, Bart.,	1840–41	Dr R. Peel Ritchie,	1874–75
Dr Alex. Ziegler,	1840–41	Dr James Young,	1876–77
Dr J. Cowan, R.N.,	1842	Dr Alex. Milne,	1876–77
Dr Fairbairn,	1842	Dr R. Peel Ritchie,	1878–79
Dr Charles Ransford,	1843	Dr Angus Macdonald,	1878–79
Dr R. B. Malcolm,	1843	Sir A. R. Simpson,	1880–81
Dr Charles Bell,	1844	Dr Robert Bruce,	1880–81
John Kennedy, Esq.,	1844	Dr James Carmichael,	1882–83
Dr John Moir,	1845–47	Sir J. Halliday Croom,	1882–83
Dr T. H. Pattison,	1845–47	Dr Angus Macdonald,	1884
Dr Beilby,	1848	Dr Charles E. Underhill,	1884–85
Dr T. Graham Weir,	1848	Dr William Ziegler,	1885
Dr R. B. Malcolm,	1849–53	Sir A. R. Simpson,	1886–87
Dr John Moir,	1849–53	Dr Leith Napier,	1886
Dr T. Graham Weir,	1854–55	Dr D. Berry Hart,	1887–88
Dr John Moir,	1854–55	Dr James Foulis,	1888–89
Dr W. Cumming,	1856–57	Dr A. J. Sinclair,	1889
Dr A. Thomson,	1856–57	Sir A. R. Simpson,	1890
Dr T. H. Pattison,	1858–59	Dr Peter A. Young,	1890–91
Dr David Wilson,	1858–59	Dr John Playfair,	1891–92
Dr T. Graham Weir,	1860–61	Dr Freeland Barbour,	1892–93
Dr George S. Keith,	1860–61	Dr A. Ballantyne,	1893–94
Dr T. Graham Weir,	1862–63	Dr James Ritchie,	1894–95
Dr Alex. Keiller,	1862–63	Sir J. Halliday Croom,	1895–96
Dr T. H. Pattison,	1864–65	Sir A. R. Simpson,	1896–97
W. S. Carmichael, Esq.,	1864–65	Dr R. Milne Murray,	1897–98
Dr John Burn,	1866–67	Dr N. T. Brewis,	1898–99
Dr Charles Bell,	1866–67	Dr J. W. Ballantyne,	1899–1900
Dr William Bryce,	1868–69	Dr Samuel Macvie,	1900–1901
Dr J. A. Sidey,	1868–69	Dr F. W. N. Haultain,	1901–1902
Dr William Menzies,	1870–71	Dr J. Haig Ferguson,	1902–1903
Dr L. R. Thomson,	1870–71	Sir A. R. Simpson,	1903–1904
Sir A. R. Simpson,	1872–73	Professor J. A. C. Kynoch,	1904–1905
Dr J. Matthews Duncan,	1872–73	Sir J. Halliday Croom,	1905–1906
Dr Angus Macdonald,	1874–75	Dr D. Berry Hart,	1906

TREASURERS.*

	Year.		Year.
Dr Ransford,	1840 to 1842	Dr J. A. Sidey,	1859 to 1867
Dr G. Paterson,	1842 to 1847	Dr James Young,	1867 to 1875
Dr Cumming,	1847 to 1854	Dr William Craig,	1875
Dr Keiller,	1854 to 1859		

SECRETARIES.

	Year.		Year.
Dr Ransford,	1840 to 1842	Dr Alexander Milne,	1873 to 1875
Dr G. Paterson,	1840 to 1847	Dr C. E. Underhill,	1875 to 1879
Dr Dunsmure,	1842 to 1847	Dr James Carmichael,	1875 to 1881
Dr Cumming,	1847 to 1854	Dr D. Berry Hart,	1879 to 1883
Dr Keith,	1847 to 1849	Dr A. H. Freeland Barbour,	1881 to 1886
Dr J. M. Duncan,	1849 to 1852	Dr R. Milne Murray,	1883 to 1889
Dr Keiller,	1852 to 1859	Dr N. T. Brewis,	1886 to 1893
Dr J. A. Sidey,	1854 to 1861	Dr J. W. Ballantyne,	1889 to 1896
Dr A. R. Simpson,	1859 to 1865	Dr F. W. N. Haultain,	1893 to 1897
Dr Peter Young,	1861 to 1863	Dr J. Haig Ferguson,	1896 to 1901
Dr W. Stephenson,	1863 to 1867	Dr William Fordyce,	1897 to 1904
Dr R. Peel Ritchie,	1865 to 1873	Dr Lamond Lackie,	1901
Dr G. Stevenson Smith,	1867 to 1871	Dr Barbour Simpson,	1904
Dr James Andrew,	1871 to 1875		

LIBRARIANS.

	Year.		Year.
Dr J. Jamieson,	1875 to 1879	Dr R. Milne Murray,	1889 to 1899
Dr C. E. Underhill,	1879 to 1883	Dr F. W. N. Haultain,	1899
Dr Peter Young,	1883 to 1889		

EDITORS OF TRANSACTIONS.

Dr J. W. Ballantyne	1896 to 1899	Dr J. Lamond Lackie,	1901 to 1905
Dr N. T. Brewis,	1899 to 1901	Dr Angus Macdonald,	1905

LIST OF FELLOWS OF THE SOCIETY.

HONORARY FELLOWS.

1898 Atthill, Lombe, M.D., Monkstown Castle, Co. Dublin.

1897 Bantock, Dr George Granville, 14 Upper Hamilton Terrace, London, N.W.

1901 Bar, Prof. Paul, M.D., 122 Rue la Boëtie, Paris.

1882 Barnes, Dr Robert, Bernersmede, Eastbourne.

1906 Bosai, Professor L. M., The University, Genoa.

1886 Bozeman, Dr Nathan, 296 Fifth Avenue, New York.

1891 Budin, Prof., Rue de la Faisanderie 54, Paris.

1901 Chrobak, Professor R., University of Vienna.

1898 Coe, Prof. Henry C., M.D., 27 East Sixty-fourth St., New York.

1898 Cullingworth, Charles J., M.D., D.C.L., 14 Manchester Square, London, W.

* Previous to 1861 the office of Treasurer was conjoined with that of Senior Secretary.

1898 Doyen, E., M.D., LL.D., Rue Piccini 6, Paris.
1882 Emmet, Dr, 93 Madison Avenue, New York.
1900 Fehling, Professor Herman, M.D., Kaiser Wilhelm's University, Strassburg.
1882 Freund, Emeritus Professor W., Kleiststrasse 5, Berlin.
1901 Fritsch, Prof. H., University of Bonn.
1902 Garrigues, Prof. H. J., Tryon, North Carolina.
1891 Gusserow, Prof., Charité, Berlin.
1882 Hegar, Professor, Albert Ludwig's University, Frieburg.
1898 Kelly, Prof. Howard A., M.D., Johns Hopkins Hospital, Baltimore, U.S.A.
1892 Koeberlé, Dr Eugene, Strassburg.
1898 Leopold, Prof. G., M.D., Seminar Strasse 25, Dresden.
1906 Makiěyeff, Professor Alexander Matvějěvic, The University, Moscow.
1895 Martin, Prof. Dr A., N. Greifswald.
1903 Morisani, Professor O., San Felice à Piazza Dante 10, Naples.
1892 Müller, Professor Peter, Berne, Switzerland.
1889 Olshausen, Professor, Frauenklinik, Artillerie Strasse 13, Berlin.
1901 Ott, Professor D. von, M.D., Professor of Obstetrics, University of St Petersburg.
1902 Pestalozza, Professor Instituts Obstetrico Policlinico, Roma.
1895 Pinard, Professor, A., 10 Rue Cambacérès, Paris.
1898 Pozzi, Professor S., M.D., Hôpital Broca, Paris.
1903 Schauta, Professor, Kochgasse 16, Vienna.
1882 Schultze, Professor B. S., University, Jena.
1903 Segond, Dr Paul, Quai d'Orsay, Paris.
1906 Simpson, Emeritus Prof. Sir Alex. R. LL.D., 52 Queen St.
1905 Sinclair, Prof. Sir William Japp, Garvock House, Dudley Road, Manchester.
1901 Sneguireff, Professor W., University of Moscow.
1876 Turner, Principal Sir W., K.C.B., LL.D., D.C.L., 6 Eton Terrace, Edinburgh.
1905 Veit, Professor, University, Halle.
1897 Williams, Sir John, Bart., M.D., LL.D., Plas Llanstephan, Carmarthenshire.
1882 Winckel, Prof. von, Ludwig-Maximilian's University, Munich.
1905 Zweifel, Professor, Frauenklinik University, Leipzig.

CORRESPONDING FELLOWS.

1884 Arnott, Brig. Surg.-Lieut.-Col. Jas., 8 Rothesay Place.
1887 Baumgartner, Dr H. S., Newcastle-on-Tyne.
1892 Beilby, Dr J. H., Bromsgrove.
1863 Belgrave, Dr, Sydney.
1888 Bentley, Dr Arthur J., Cairo.
1880 Bosch, Dr Van Den, Liège.
1880 Brock, Dr W. J., Edinburgh.
1863 Brown, Dr R. C., Preston.
1887 Chepmell, Dr C. W. J., London.
1894 Curatulo, Prof. G. E., Rome.
1869 Davies, Mr Thos., Whittlesea.
1873 Donovan, Mr W., Birmingham.
1877 Engelmann, Dr G., Kreuznach.
1896 Eyres, Hugh, Richmond.
1864 Finlay, Right Hon. Sir R. B., M.D., LL.D., K.C., London.
1883 Fraser, Dr Dyce, London.
1892 Fraser, Dr Hugh E., Dundee.
1879 Glaister, Prof., Glasgow.
1877 Grassett, Dr F., Toronto.
1868 Grenser, Dr Paul W. T., Dresden.
1864 Grévé, Dr, Norway.
1875 Groesbeck, Dr Hermann J., New York.
1897 Günsberg, Charkow, Russia.
1853 Hall, Dr D., Montreal.
1870 Haynes, Dr Stanley L., Malvern.
1880 Helme, Dr J. M., Carnforth.
1885 Helme, Dr T. A., Manchester.
1865 Henderson, Dr E., China.
1893 Howard-Jones, Dr J., Newport.
1887 Hume, Dr T., Surgeon-Major, India.
1881 Hurst, Dr George, Australia.
1882 Husband, Dr H. Aubrey, Manitoba.
1893 Hutchison, Dr Robert, London.
1894 Jennings, Dr David D., New York.

1871 Johnston, Dr A. C., R.N., Edinburgh.
1882 Johnston, Sur.-Maj. Wilson, India.

1845 Keith, Dr George S., Currie.
1867 Kingston, Dr, Montreal.
1874 Kleinwächter, Prof. L., Grätz.
1871 Lambert, Dr, Paris.
1887 Limont, Dr J., Newcastle-on-Tyne.
1867 Lord, Dr Richard, London.

1859 Macdonald, Dr F. R., Inveraray.
1878 Macdougall, Dr John A., Cannes.
1879 Machattie, Dr Thomas A., Australia.
1862 Mackay, Dr M. A., Canada.
1870 M'Kendrick, Prof., Glasgow.
1869 M'Millan, Dr T. L., Australia.
1879 Marshall, Dr Thomas, London.
1866 Martin, Dr Karl, Berlin.
1860 Milburn, Dr George, London.
1883 Mills, Dr B. Langley, India.
1897 Minchin, Dr, Charkow, Russia.
1861 Mitchell, Sir Arthur, LL.D., Edinburgh.
1877 Moolman, Dr Henry, South Africa.
1869 Mossop, Mr Isaac, Bradford.
1859 Myrtle, Dr A. S., Harrogate.

1884 Neve, Dr E. F., Kashmir.

1849 Norris, Mr H., Petherton.

1857 Parker, Dr, Nova Scotia.
1869 Paton, Dr J. W., Bath.
1840 Peddie, Dr Alexander, Edinburgh.
1885 Puckle, Dr S. Hale, Bishop's Castle.

1880 Reid, Dr James More, Aldershot.

1878 Serdukoff, Dr A., St Petersburg.
1887 Shiels, Dr G. F., San Francisco.
1856 Skinner, Dr T., London.
1870 Smith, Dr D., Montrose.
1890 Smith, Dr William, America.
1861 Stephenson, Prof. W., Aberdeen.
1888 Stevenson, Sir Edmond Sinclair, Cape of Good Hope.
1854 Storer, Dr H., Boston, U.S.A.
1875 Sutugin, Dr V., St Petersburg.

1867 Thomson, Mr W., Wrenbury.
1880 Turner, Dr William, Gibraltar.

1861 Veale, Dr H. R. L., London.

1864 Whiteford, Dr James, Greenock.
1886 Whitton, Dr A. B., Aberchirder.
1865 Wollowicz, Dr C., St Petersburg.

ORDINARY FELLOWS.

ARRANGED CHRONOLOGICALLY.

Note.—Those marked with an asterisk have been Members of Council. Members of Council continue in office two years.

		Date of Admission
	James Watt Black, M.D., F.R.C.P. Lond., *London*,	1863
	Thomas John Fordyce Messer, M.D., F.F.P. & S. Glasg., *Garelochhead*,	1866
	John Charles Ogilvie Will, M.D., C.M., *Aberdeen*,	1867
	William Spalding, M.D., M.R.C.S. Eng., *Gorebridge*,	1867
5	George Dickson, M.D., F.R.C.S. Ed.,	1867
	*James Andrew, M.D., F.R.C.P. Ed.,	1868
	*William Taylor, M.D., F.R.C.P. Ed.,	1868
	James Ormiston Affleck, M.D., F.R.C.S. Ed., F.R.C.P. Ed.,	1869
	William Craig, M.D., F.R.C.S. Ed.,	1870
10	****Professor Sir John Halliday Croom, M.D., F.R.C.S. Ed., F.R.C.P. Ed.,	1870
	**Alexander Ballantyne, M.D., F.R.C.P. Ed., *Dalkeith*,	1870
	William Borwick Robertson, M.D., L.R.C.S. Ed., *London*,	1870
	**James Carmichael, M.D., F.R.C.P. Ed.,	1871
	**Peter Alexander Young, M.D., F.R.C.P. Ed.,	1871
15	**Charles Edward Underhill, M.B., F.R.C.P. Ed., F.R.C.S. Ed.,	1872
	***John Playfair, M.D., P.R.C.P. Ed.,	1873

		Date of Admission.
	**Henry Macdonald Church, M.D., F.R.C.P. Ed.,	1875
	James Lindsay Howison Herbert Porteous, M.D., F.R.C.S. Ed., M.R.C.P. Ed., *New York*,	1875
	Archibald Bleloch, M.B., Sc.D.,	1876
20	Joshua John Cox, M.D., F.R.C.S. Ed., *Eccles, Manchester*,	1876
	James Dunsmure, M.D., LL.D., F.R.C.S. Ed.,	1876
	*Thomas Rutherford Ronaldson, M.B., F.R.C.P. Ed.,	1876
	Charles H. Thatcher, F.R.C.S. Ed.,	1876
	*John Brown Buist, M.D., F.R.C.P. Ed.,	1877
25	George Herbert Bentley, L.R.C.P. & S. Ed., *Kirkliston*,	1877
	Andrew Douglas Ramsay Thomson, F.R.C.P. Ed., *Musselburgh*,	1877
	James Stitt Thomson, M.D., F.R.C.P. Ed., F.R.C.S. Ed., *Lincoln*,	1877
	John Archibald, M.D., F.R.C.S. Ed., *Bournemouth*,	1877
	*****David Berry Hart, M.D., F.R.C.P. Ed.,	1877
30	*Andrew Balfour, M.D., C.M., *Portobello*,	1877
	*David Menzies, M.B., F.R.C.S. Ed.,	1877
	Donald Roderick Morrison Murray, M.B., C.M., *Leith*,	1878
	Robert Spence, M.B., C.M., *Burntisland*,	1878
	George Mackay, M.B., F.R.C.S. Ed.,	1878
35	James Henry Croudace, L.R.C.P. & S. Ed., *Stafford*,	1878
	Alexander Dinsey Leith Napier, M.D., M.R.C.P.L., *Australia*,	1878
	John M'Watt, M.B., C.M., *Duns*,	1879
	*William Nicol Elder, M.D., L.R.C.P. & S. Ed.,	1879
	Henry Hay, M.B., C.M.,	1879
40	Abraham Wallace, M.D., F.F.P. & S. Glasg., *London*,	1879
	*John Rogerson Hamilton, M.D., C.M., *Hawick*,	1879
	George Rothwell Adam, M.D., C.M., *Melbourne*,	1879
	*****Alexander Hugh Freeland Barbour, M.D., F.R.C.P. Ed.,	1879
	James Murray, M.B., C.M.,	1879
45	Andrew James Duncan, M.D., L.R.C.S. Ed., *Dundee*,	1879
	T. Edgar Underhill, M.D., F.R.C.S. Ed., *Barnt Green*,	1879
	William Swanstone Spence Reid, M.B., C.M., *Kirkcudbright*,	1880
	**William Loudon Reid, M.D., F.F.P. & S. Glasg., *Glasgow*,	1880
	****James Ritchie, M.D., F.R.C.S. Ed., F.R.C.P. Ed.,	1880
50	William Alexander Finlay, M.D., F.R.C.S. Ed., *Trinity*,	1880
	James More, M.D., M.R.C.S. Eng., *Rothwell, Kettering*,	1880
	Thomas Rennie Scott, M.D., C.M., *Musselburgh*,	1880
	*George Hunter, M.D., F.R.C.S. Ed., F.R.C.P. Ed.,	1881
	John E. Ranking, M.D., F.R.C.P.L., M.R.C.S. Eng., *Tunbridge Wells*,	1881
55	*Arthur Douglas Webster, M.D., F.R.C.P. Ed.,	1881
	William Haig Brodie, M.D., F.R.C.S. Eng., *London*,	1881
	James Hewetson, M.B., C.M., *Holmfield, Reigate*,	1881
	**Samuel MacVie, M.B., C.M., *Chirnside*,	1881
	John Waugh, M.D., C.M., *London*,	1881
60	Hugh Logan Calder, M.D., F.F.P. & S. Glasg.,	1882
	Henry Anderson Peddie, M.B., C.M.,	1882
	Thomas Fisher Gilmour, L.R.C.P. Ed., L.F.P. & S. Glasg., *Islay*,	1882
	Andrew Stark Currie, M.D., M.R.C.S. Eng., *London*,	1882
	William Black Alexander, L.F.P. & S. Glasg.,	1882
65	Harry George Deverell, M.D., C.M.,	1882
	*George Keppie Paterson, M.B., F.R.C.P. Ed.,	1882
	Herbert R. Rendell, M.B., C.M., *St John's, Newfoundland*,	1882
	David Smart, M.B., C.M., *Liverpool*,	1882
	***Nathaniel Thomas Brewis, M.B., F.R.C.P. Ed., F.R.C.S. Ed.,	1883
70	*John William Ballantyne, M.D., F.R.C.P. Ed.,	1883
	Thomas Proudfoot, M.B., F.R.C.P. Ed.,	1884

		Date of Admission.
	W. Fraser Macdonald, M.B., C.M., *Glasgow*,	1884
	William Spence, M.B., C.M., *Dollar*,	1884
	William Wright Millard, M.B., C.M.,	1884
75	John Mowat, M.D., C.M.,	1884
	James Lumsden Bell, M.B., C.M., *Driffield, Yorkshire*,	1884
	*Thomas Brown Darling, M.D., C.M.,	1884
	*Harry Melville Dunlop, M.D., F.R.C.P. Ed.,	1884
	*Robert William Felkin, M.D., *London*,	1884
80	James K. King, M.D., *Watkins, New York*,	1884
	William Marshall, L.R.C.S. Ed., *Milnathort*,	1884
	Fourness Barrington, M.B., F.R.C.S. Eng., *Sydney, Australia*,	1884
	*Francis William Nicol Haultain, M.D., F.R.C.P. Ed.,	1884
	*John Struthers Stewart, L.R.C.P. & S. Ed.,	1884
85	Frederick Anastasius Saunders, F.R.C.S. Ed., L.R.C.P. Ed., *Grahamstown, South Africa*,	1885
	John Smith, M.D., M.R.C.S. Eng., *Kirkcaldy*,	1885
	Frederick J. Underhill, F.R.C.S. Ed., L.R.C.P. Ed., *British Columbia*,	1885
	William Gayton, M.D., M.R.C.P.L., M.R.C.S. Eng., *London*,	1885
	Gustave Michael, M.B., C.M., *London*,	1885
90	**James Haig Ferguson, M.D., F.R.C.P. Ed., M.R.C.S. Eng., F.R.C.S. Ed.,	1885
	John Edward Gemmell, M.B., C.M., *Liverpool*,	1885
	Robert Stewart, M.B., C.M.,	1885
	Surgeon-Captain Robert Charles Macwatt, M.B., B.Sc., C.M., 7th Bengal Cavalry, *Bombay*	1885
	*E. H. Lawrence Oliphant, M.D., C.M., *Glasgow*,	1885
95	James Hogarth Pringle, M.B., F.R.C.S. Eng., *Glasgow*,	1886
	John Walton Hamp, L.F.P. & S. Glasg., L.S.A., *Wolverhampton*,	1886
	James Auriol Armitage, M.D., C.M., *Wolverhampton*,	1886
	William Henry Miller, M.D., F.R.C.P. Ed.,	1886
	John M'Call, L.R.C.P. Ed.,	1886
100	*Thomas Wood, M.D., C.M.,	1886
	Hugh M'Callum, L.R.C.P. & S. Ed., *Kinloch-Rannoch*,	1887
	Nutting Stuart Fraser, M.B., M.R.C.S. Eng., *St John's, Newfoundland*,	1887
	Augustus Alexander Matheson, M.D., F.R.C.P. Ed.,	1887
	Robert Mackenzie, M.D., C.M., *Nairn*,	1887
105	Thomas Jackson Thyne, M.B., F.R.C.P. Ed.,	1887
	John St Clair Boyd, M.D., M.Ch., *Belfast*,	1887
	Ernest T. Roberton, M.D., M.R.C.S. Eng., *New Zealand*,	1887
	*Samuel Sloan, M.D., F.F.P. & S. Glasg., *Glasgow*,	1887
	James Wm. Fox, L.R.C.P. & S. Ed., *Southampton*,	1887
110	John Frederick Sturrock, M.B., C.M., *Broughty-Ferry*,	1887
	Alexander Primrose, M.B., M.R.C.S. Eng., *Toronto, Canada*,	1887
	Arthur Perigal, M.D., M.R.C.S. Eng., *New Barnet, Herts*,	1887
	James Aitken Clark, M.B., C.M.,	1887
	Edward Carmichael, M.D., F.R.C.P. Ed.,	1887
115	Percival Humble Watson, M.R.C.S. Eng., L.R.C.P. Ed., *Newcastle-on-Tyne*,	1887
	Charles Clark Teacher, M.B., C.M., *North Berwick*	1887
	Robert Inch, M.B., C.M., *Gorebridge*,	1887
	Ellis Thomas Davies, M.D., M.R.C.S. Eng., *Liverpool*,	1887
	John Orr, M.B., C.M., *Eccles, Lancashire*,	1887
120	*George Owen Carr Mackness, M.D., C.M., *Broughty-Ferry*.	1887
	Francis Joseph Baildon, M.B., C.M., *Southport*,	1887
	Surgeon-Lt. Ralph H. Maddox, M.B., M.R.C.S. Eng., I.M.S., *Bengal*,	1887
	James Williamson Martin, M.D., F.R.C.P. Ed., *Dumfries*,	1887

		Date of Admission.
	James Andrew Blair, M.D., C.M., D.Sc., *Newcastle-on-Tyne*,	1887
125	*John Thomson, M.D., F.R.C.P. Ed.,	1887
	Robert Kirk, M.D., F.R.C.S. Ed., *Bathgate*,	1887
	*William Fraser Wright, M.B., C.M., *Leith*,	1887
	Richard Joseph Tristan, L.R.C.P. & S. Ed., *Retford, Notts*,	1887
	Robert Henry Blaikie, M.D., F.R.C.S. Ed.,	1888
130	James Hutcheson, M.D., F.R.C.S. Ed.,	1888
	A. A. Jervis Pereira, M.D., *Delagoa Bay*,	1888
	Christopher Martin, M.B., F.R.C.S. Eng., *Birmingham*,	1888
	John George Havelock, M.D., C.M., *Montrose*,	1888
	John Pirie, M.B., C.M.,	1888
135	James Gibson Graham, M.B., C.M., *Glasgow*,	1888
	Robert Adams Brewis, M.D., C.M., *Dursley*,	1888
	John Allison, M.D., C.M., *Kettering, Northampton*,	1888
	Archibald Cowan Guthrie, M.B., C.M.,	1888
	Samuel Beatty, M.B., C.M., *Pitlochry*,	1888
140	Professor James Chalmers Cameron, M.D., *Montreal*,	1888
	Albert Edward Morison, M.B., F.R.C.S. Ed., M.R.C.S. Eng., *West Hartlepool*,	1888
	George H. Temple, M.B., C.M., *Weston-super-Mare*,	1888
	Norman L. Boxill, M.B., C.M., *Barbados*,	1888
	John Hunter Helm, M.B., C.M., *Ratho*,	1888
145	George Scott MacGregor, M.D., C.M., *Glasgow*,	1888
	William Sneddon, M.B., C.M., *Cupar-Fife*,	1888
	Thomas Watts Eden, M.B., C.M., *London*,	1888
	*William Fordyce, M.D., F.R.C.P. Ed.,	1888
	Charles E. Harvey, M.B., M.R.C.S. Eng., *Sav-la-Mar, Jamaica*,	1889
150	Alexander Lang Murray, L.R.C.P. & S. Ed., *Australia*,	1889
	*George Pirrie Boddie, M.B., C.M.,	1889
	James F. W. Ross, M.D., *Toronto, Canada*,	1889
	J. Stuart Nairne, F.R.C.S. Ed., F.F.P. & S. Glasg., *Glasgow*,	1889
	James S. Fox, M.B., M.R.C.S. Eng., *St Helens*,	1889
155	Hugh Jamieson, M.D., C.M.,	1889
	Thomas Wm. Nassau Greene, L.R.C.P. Ed., L.R.C.S.I., *Dublin*,	1889
	Prof. John Clarence Webster, M.D., F.R.C.P. Ed., *Chicago*,	1889
	*William George Aitchison Robertson, M.D., F.R.C.P. Ed.,	1889
	William Basil Orr, M.D., C.M.,	1889
160	*Edward Farr Armour, M.B., C.M.,	1889
	George Wilkinson, M.D., C.M., *Liverpool*,	1889
	*James Lamond Lackie, M.D., F.R.C.P. Ed.,	1889
	James Wilson, M.B., C.M.,	1889
	Archibald Maclean, M.D., C.M., *Kilmarnock*,	1890
165	Frederick William Lyle, M.D., C.M., *London*,	1890
	Thomas Dobson Poole, M.D., C.M., *Linthwaite*,	1890
	Charles Newberry Cobbett, M.D., C.M., *Alberta*,	1890
	Alexander William Gordon Price, M.B., C.M.,	1890
	Hugh Shapter Robinson, M.R.C.S. Eng., L.R.C.P. Ed., *London*,	1890
170	*George Matheson Cullen, M.D., C.M.,	1890
	Frederick Albert L. Lockhart, M.B., C.M., *Montreal, Canada*,	1890
	Edmund Frederick Tanney Price, M.B., C.M.,	1890
	Ernest Theophilus Roberts, M.D., C.M., *Keighley*,	1890
	Owen Foulkes Evans, M.D., C.M., *Liverpool*,	1890
175	James Duncan Farquharson, M.B., C.M., *Newcastle-on-Tyne*,	1890
	Harvey Littlejohn, M.B., F.R.C.S. Ed.,	1890
	Carstairs Cumming Douglas, M.D., F.F.P. & S. Glasg., *Glasgow*	1890
	Robert Wise, M.D., C.M., *London*,	1890
	William Russell, M.D., F.R.C.P. Ed.,	1890

		Date of Admission.
180	Alexander Scott Duncan, M.B., C.M., *Polton*,	1890
	Prof. William Keiller, F.R.C.S. Ed., *Galveston, Texas, U.S.A.*,	1890
	*Michael Dewar, M.D., C.M.,	1891
	Gains T. Smith, M.D., *Moncton, New Brunswick*,	1891
	John Hugh Alexander Laing, M.B., C.M.,	1891
185	Robert Thin, M.B., F.R.C.P. Ed.,	1891
	Alexander Henry Vassie, M.B., C.M., *London*,	1891
	James Harvey, M.D., C.M.,	1891
	Alexander Henderson, M.B., C.M.,	1891
	James Smith, M.D., C.M.,	1891
190	George Balfour Marshall, M.D., C.M., *Glasgow*,	1891
	William Booth, F.R.C.S. Ed.,	1891
	Richard T. Yoe, M.D., *Louisville, Kentucky, U.S.A.*,	1891
	Alexander Bruce Giles, M.D., C.M.,	1891
	Hamilton Graham Langwill, M.D., F.R.C.P. Ed., *Leith*,	1891
195	Herbert Ernest Lee, M.B., C.M., *Australia*,	1891
	Charles Martin, M.B., C.M., *Newton Abbot*,	1892
	William Murray Cairns, M.B., C.M., *Liverpool*,	1892
	Robert Dundas Helm, M.D., C.M., *Carlisle*,	1892
	James Thomas Moore Giffen, F.R.C.S. Ed., *Chester*,	1892
200	Frank Dendle, M.B., D.P.H., *Isleworth*,	1892
	Frederick Thomas Anderson, M.D., F.R.C.S. Ed., *Shrewsbury*,	1892
	Simson Carstairs Fowler, M.B., C.M., *Juniper Green*,	1892
	Prof. John Alexander Campbell Kynoch, M.B., F.R.C.P. Ed., *Dundee*,	1892
	Walter John Shaw, M.B., C.M., *Cockburnspath*,	1892
205	Robert Stirling, M.D., C.M., *Perth*,	1892
	William Henry Vickery, F.R.C.S. Eng., L.R.C.P. Lond., *Newcastle-on-Tyne*,	1892
	William Ramsay Smith, M.B., C.M., *Australia*,	1892
	A. Watson Munro, M.D., *Sydney, Australia*,	1892
	Charles Frederick Ponder, M.B., C.M., *Tasmania*,	1892
210	John Tod, M.B., C.M., *Leith*,	1892
	George Henry Walter Smith, M.D., C.M., *Sydney, Australia*,	1892
	Charles Croomhall Easterbrook, M.D., C.M., *Ayr*,	1892
	Walter Petrie Simpson, M.B., C.M., *Bathgate*,	1892
	*James Ernest Moorhouse, M.D., C.M., *Stirling*,	1892
215	D. W. Johnston, F.R.C.S. Ed., *Johannesburg, South Africa*,	1892
	David George Davidson, M.B., C.M.,	1892
	Allen Thomson Sloan, M.D., C.M.,	1893
	Robert Balfour Graham, F.R.C.S. Ed., *Leven, Fife*,	1893
	Albert Frederic Rosa, M.D., C.M.,	1893
220	George Benjamin Mitchell, M.B., C.M., *Whitby*,	1893
	Henry Robins, M.D., *Jamaica*,	1893
	Linn J. Schofield, M.D., *Warrensburg, Mo., U.S.A.*,	1893
	David Milligan, M.B., C.M.,	1893
	George Morton Wilcockson, L.R.C.P. & S. Ed., *Reading*,	1893
225	John MacRae, M.D., C.M., *Murrayfield*,	1893
	George Wade, M.D., C.M., *Melrose*,	1893
	Philip Grierson Borrowman, M.D., C.M., *Crieff*,	1893
	William Herbert Gregory, M.D., C.M., *Beverley, Yorks*,	1893
	James Gibson Cattanach, M.B., F.R.C.P. Ed.,	1893
230	Alexander Maitland Easterbrook, M.B., C.M., *Gorebridge*,	1893
	Robert William Roberts, L.R.C.P. & S. Ed., *North Wales*,	1894
	Claude Buchanan Ker, M.D., F.R.C.P. Ed.,	1894
	John Malcolm Farquharson, M.B., C.M.,	1894
	Charles Alexander Butchart, M.B., C.M.,	1894
235	Frederick Maurice Graham, F.R.C.S. Ed., L.R.C.P. Ed.,	1894

		Date of Admission.
	Robert Hoggan, M.B., C.M., *Liberton*,	1894
	James Livingstone Thompson, M.B., C.M., *Australia*,	1894
	John Stevens, M.D., F.R.C.P. Ed.,	1894
	Hugh Lewis Hughes, L.R.C.P. & S. Ed., *Dowlais*,	1894
240	Sylvanus Glanville Morris, M.D., C.M., *Mardy*,	1894
	Georges P. Coromilas, M.D., *Athens, Greece*,	1894
	Thomas Easton, M.D., C.M., *Southampton*,	1894
	David Robertson Dobie, M.D., C.M., *Crieff*,	1894
	Gopal Govind Vatve, M.D., *Bombay*,	1894
245	Robert William Beesley, M.D., C.M., *Bolton*,	1894
	William A. Stephen, M.D., C.M., *Loftus-in-Cleveland*,	1894
	William Edward Fothergill, M.D., C.M., *Manchester*,	1894
	George Sandison Brock, M.D., C.M., *Rome*,	1894
	*John Martin Munro Kerr, M.B., C.M., *Glasgow*,	1894
250	John Montgomery, M.B., C.M., *Birmingham*,	1895
	*Robert Cochrane Buist, M.D., C.M., *Dundee*,	1895
	Robert Thomson Ferguson, M.B., C.M., *Anstruther*,	1895
	Angus Vallance MacGregor, M.D., C.M., *West Hartlepool*,	1895
	Charles William Donald, M.D., F.R.C.S. Ed., *Carlisle*,	1895
255	John Struthers, M.B., C.M., *Transkei, South Africa*,	1895
	B. W. Broad, M.B., C.M., *Cardiff*,	1895
	Edwin Hindmarsh, M.B., C.M., *Bengal*,	1895
	Patrick Mackin, M.D., F.R.C.S. Ed., *New Zealand*,	1895
	G. Edgar Helme, M.B., C.M., *Manchester*,	1895
260	Percy Theodore Hughes, M.B., C.M., *Bexley*,	1895
	John Hosack Fraser, M.B., F.R.C.P. Ed., *Bridge of Allan*,	1895
	Stewart Grant Ogilvy, M.B., C.M., *Fauldhouse*,	1895
	Thomas Howard Morgan, M.D., F.R.C.S. Ed., *Queensland, Aust.*,	1895
	William Macrae Taylor, M.B., F.R.C.S. Ed.,	1895
265	David James Graham, M.D., F.R.C.P. Ed.,	1895
	Walter William Chipman, M.D., F.R.C.S. Ed., *Montreal*,	1895
	John Cumming, F.R.C.S. Ed., F.R.C.P. Ed.,	1896
	Sol Jervois Aarons, M.D., C.M., *London*,	1896
	Robert Beveridge, M.B., C.M., *Leith*,	1896
270	John Anderson, M.B., C.M., *Pitlochry*,	1896
	Thomas John Burton, M.D., C.M., *Australia*,	1896
	Robert Gordon M'Kerron, M.B., C.M., *Aberdeen*,	1896
	Frederick John M'Cann, M.D., M.R.C.P.L., *London*,	1896
	David Robert Taylor, L.R.C.P. & S.Ed., *Ayton*,	1896
275	George William Simla Paterson, M.B., C.M.,	1896
	Robert Henry Watson, M.D., C.M.,	1896
	Thomas Marshall Callender, M.D., C.M., *Sidcup*,	1896
	Lewis Grant, M.D., C.M., *Neston*,	1896
	Robert Robertson, M.B., C.M.,	1897
280	James Wilkie, L.R.C.P. & S. Ed., *Portobello*,	1897
	Andrew Graham, M.D., *Currie*,	1897
	Douglas Chalmers Watson, M.D., F.R.C.P. Ed.,	1897
	Roderick Murdoch Matheson, M.D., F.R.C.S. Ed.,	1897
	*Robert Jardine, M.D., F.F.P.S. Glasg., M.R.C.S. Eng., *Glasgow*,	1897
285	Daniel Charles Edington, M.D., C.M., *Penrith*,	1897
	John Macmillan, M.D., F.R.C.P. Ed., F.R.C.S.Ed.,	1897
	Harold Sherman Ballantyne, M.B., C.M., *Dalkeith*,	1897
	Ernest Edward Porritt, M.D., F.R.C.S. Ed., *New Zealand*,	1897
	William John Garbutt, M.B., C.M., *Birmingham*,	1897
290	Henry John Forbes Simson, M.B., F.R.C.S. Ed., *London*,	1897
	William Alexander Potts, M.D., C.M., *Birmingham*,	1897
	Angus Macdonald, M.B., F.R.C.S. Ed.,	1897
	Bernard Samuel Story, M.D., F.R.C.S. Ed., *New Zealand*,	1898

		Date of Admission.
	Alexander Macdonald, M.B., F.R.C.S.Ed.,	1898
295	George Robert Livingston, M.D., C.M., *Dumfries*,	1898
	Charles Carmichael Forrester, M.B., C.M.,	1898
	William Morrison Milne, M.B., C.M.,	1898
	William Joseph Murphy Barry, M.D., M.R.C.P.Ed., *Penarth*,	1898
	John Christie Forbes, L.R.C.P. & S. Ed., *Liberton*,	1898
300	Alexander Cruikshank Ainslie, M.D., C.M.,	1898
	Henry Aylmer Dumat, M.D., F.R.C.P.Ed., *Durban, South Africa*,	1898
	Gabriel Maurange, M.D., *Paris*,	1898
	John Thomas Woodside, L.R.C.P. & S. Ed., *Stewartstown*,	1898
	George Freeland Barbour Simpson, M.D., F.R.C.S. Ed., F.R.C.P. Ed.,	1898
305	Alfred Charles Sandstein, M.D., Ch.B., *New Zealand*,	1898
	Alfred Shearer, M.B., Ch.B., *Newtown, N. Wales*,	1898
	John Henry Rhodes, M.B., Ch.B., *Kendal*,	1898
	James Duncan Slight, M.D., Ch.B., *Leicester*,	1898
	Francis John Harvey Bateman, M.D., C.M., *London*,	1898
310	Robert John Johnston, M.B., C.M.,	1899
	George Lyall Chiene, M.B., F.R.C.S. Ed.,	1899
	William Bertie Mackay, M.D., *Berwick-on-Tweed*,	1899
	Edward William Scott Carmichael, M.D., F.R.C.S. Ed.,	1899
	James Wilson M'Brearty, F.R.C.S.Ed., L.R.C.P.Ed., *New Zealand*,	1899
315	George Crewdson Thomas, M.D., C.M., *London*,	1899
	John Eason, M.D., F.R.C.P.Ed., *Leith*,	1899
	William John Barclay, M.D., F.R.C.S., Ed., *New Zealand*,	1899
	Frederick Adolphus Fleming Barnardo, M.B., Ch.B., *India*,	1899
	Alexander Dingwell Fordyce, M.D., F.R.C.P. Ed.,	1899
320	William Thomas Ritchie, M.D., F.R.C.P. Ed.,	1899
	Owen, St John Moses, M.D., C.M., B.Sc., *Calcutta*,	1900
	Charles Wakeham Holmested, L.R.C.P. & S. Ed., L.F.P.S. Glasg., *Tuxford*,	1900
	Donald MacGregor, M.D., C.M., *Jedburgh*,	1900
	*Harry Oliphant Nicholson, M.D., F.R.C.P. Ed.,	1900
325	Thomas Scott Brodie, M.B., C.M., *Wishaw*,	1900
	William Hope Fowler, M.B., Ch.B.,	1900
	John Stanley Manford, M.B., B.S., *Newcastle-on-Tyne*,	1900
	Ogden Watson Ogden, M.D., M.R.C.S., *Newcastle-on-Tyne*,	1900
	John Craig, M.B., Ch.B.,	1900
330	William Hartley Bunting, M.D., F.R.C.S. Ed., *Birmingham*,	1900
	Theodore Charles Mackenzie, M.B., Ch.B.,	1900
	Donald George Hall, M.B., M.R.C.S. Eng., *Sussex*,	1900
	Hugh Corbett Taylor Young, M.D., C.M., *Sydney*,	1900
	John Boyd Jamieson, M.D., F.R.C.S. Ed.,	1900
335	Malcolm M'Larty, M.B., C.M.,	1900
	Peter Joseph Henry Ferguson, M.B., C.M.,	1900
	Frederick Gardiner, M.D., C.M.,	1900
	George Mackie, M.B., Ch.B., *Malvern*,	1900
	Kenmure Duncan Melville, M.D., Ch.B.,	1900
340	John Thomas Dickie, L.R.C.P. & S. Ed.,	1900
	William Ernest Frost, M.B., Ch.B.,	1900
	Frederick David Simpson, M.D., F.R.C.S. Ed.,	1900
	Francis Wilfrid Harlin, F.R.C.S. Ed., L.R.C.P.Ed., *Queensland*,	1900
	William Darling, M.B., F.R.C.S. Ed.,	1900
345	Robert Macfarlane Mitchell, M.B., F.R.C.S. Ed.,	1900
	Malcolm Campbell, M.B., F.R.C.S. Ed.,	1900

		Date of Admission.
	James Ramsay Munro, M.D., Ch.B., *Spalding*,	1901
	George James Rogerson Carruthers, M.B., Ch.B.,	1901
	Hilda Maud M'Farlane, L.R.C.P. & S. Ed., *Larbert*,	1901
350	George Dickson, M.D., C.M.,	1901
	Elsie Maud Inglis, M.B., C.M.,	1901
	George Robertson, L.R.C.P. & S. Ed., *Dunfermline*,	1901
	John Jeffrey, M.B., F.R.C.S. Ed., *Jedburgh*,	1901
	John Wishart Kerr, M.B., Ch.B.,	1901
355	William Harold Graham Aspland, M.D., M.R.C.S. Eng., *China*,	1901
	William Taylor McArthur, M.D., F.R.C.S. Ed., *California*,	1901
	Alexander Waddel Greenhorn Clark, M.B., C.M.,	1901
	Henry Overton Hobson, M.D., C.M., *London*,	1901
	Robert Patton Ranken Lyle, M.D., Ch.B., *Newcastle-on-Tyne*,	1901
360	Frederick William Kerr Tough, L.R.C.P. & S. Ed., *Leith*,	1901
	Robert Ashleigh Glegg, M.D., Ch.B., *Leith*,	1901
	Walter Scott Patton, M.B., Ch.B., *S. Arabia*,	1901
	David Whiteside Maclagan, M.B., Ch.B., *New Zealand*,	1901
	Kennedy C. M'Ilwraith, M.B., M.C.P. & S. Ont., *Toronto*,	1901
365	Robert Alexander John Harper, M.D., Ch.B., *Dalkeith*,	1901
	William Hogg Prentice, M.D., Ch.B., *Pendleton*,	1901
	Alexander Mowatt Malcolmson, M.B., Ch.B., *Corstorphine*,	1901
	David Albert Callender, M.B., Ch.B., *Knutsford*,	1901
	Caleb Williams Saleeby, M.D., Ch.B., *London*,	1902
370	John Andrew Douglas Thompson, *Halesowen*,	1902
	John Ligertwood Green, M.B., Ch.B.,	1902
	William Sloss, M.B., Ch.B., *Australia*,	1902
	Charles James Hill Aitken, M.D., C.M., *Cape Colony*,	1902
	E. R. Secord, M.D., *Ontario*,	1902
375	F. E. Thompson, M.D., *Montreal*,	1902
	John M'Gibbon, M.B., C.M.,	1902
	Thomas James Thomson, M.D., C.M.,	1902
	Charles Mowbray Pearson, M.B., Ch.B.,	1902
	Ewen John Maclean, M.D., M.R.C.P. Lond., *Cardiff*,	1902
380	James William Somerville, M.D., C.M., *Galashiels*,	1902
	Alexander Miller, L.R.C.P. Ed., L.F.P.S. Glasg., *Glasgow*,	1902
	Hugh Faulkner, M.B., Ch.B., *Banbury*,	1902
	Duncan Macnab Callender, M.B., Ch.B., *Lancaster*,	1902
	Robert Cranston Low, M.B., Ch.B.,	1902
385	Benjamin Philip Watson, M.B., Ch.B.,	1902
	John Macdonald, M.B., C.M., *Cupar-Fife*,	1902
	Mabel Hardie, M.B., Ch.B., *Stockport*,	1902
	John Sullivan, M.B., Ch.B.,	1902
	Charles William Somerville, M.B., Ch.B., *China*,	1902
390	Frank Mayes Willcox, M.B., C.M.,	1902
	John Tennant, M.B., C.M., *Ashby*,	1902
	Alexander Simpson Wells, M.B., F.R.C.S. Ed., *Cape Town*,	1903
	Andrew Binny Flett, M.B., Ch.B.,	1903
	William Henry Eden Brand, F.R.C.S. Ed., L.R.C.P. Ed., *Banchory*,	1903
395	Francis Cavanagh, M.B., Ch.B., *Sheffield*,	1903
	Alfred Lambré White, L.R.C.P. & S. Ed., *Manchester*,	1903
	Robert Bathgate Johnston, L.R.C.P. & S. Ed., *Penrith*,	1903
	William Llewellyn Jones, M.D., F.R.C.S. Ed., *Merthyr-Tydvil*,	1903
	Robert Wilson Gibson, M.D., F.R.C.S. Ed., *Orton*,	1903
400	Philip Henry Mules, M.B., Ch.B., *New Zealand*,	1903
	Andrea Francis Honyman Rabagliati, *Bradford*,	1903

		Date of Admission.
	Donald Gregor MacArthur, M.D., C.M., *Aberfeldy*,	1903
	Henry Martyn Stumbles, M.B., Ch.B., *Amble*,	1903
	Gilbert John Farie, M.B., Ch.B., *Bridge of Allan*,	1903
405	Cameron Robertson Gibson, M.B., Ch.B., *Gretna*,	1903
	James Mathieson Kirkness, M.D., Ch.B.,	1903
	Katherine Jane Stark Clark, M.B., Ch.B.,	1903
	David Halliday Croom, M.D., Ch.B.,	1903
	Eleanor Russell Elder, M.B., Ch.B., *Leith*,	1903
410	Robert William Johnstone, M.D., Ch.B.,	1903
	James William Keay, M.D., Ch.B.,	1903
	Ivan Cochrane Keir, M.D., Ch.B., *Melksham*,	1903
	Alexander Grant Macdonald, M.B., C.M.,	1903
	Charles John Shaw, M.D., Ch.B., *Murthly*,	1903
415	Frederick Porter, M.B., C.M.,	1904
	Sherwin Gibbons, M.D., *Los Angeles*,	1904
	Russell Gerald William Adams, M.D., Ch.B., *New Zealand*	1904
	Duncan Campbell Lloyd Fitzwilliams, M.D., Ch.B., *London*,	1904
	Clarence Brian Dobell, M.B., M.R.C.S. Eng., M.R.C.P.L., *Cheltenham*,	1904
420	Hugh Stevenson Davidson, M.B., Ch.B.,	1904
	Andrew Milroy Fleming, C.M.G., M.B., F.R.C.S. Ed., *Rhodesia*,	1904
	Thomas William Edmondston Ross, M.B., Ch.B., *Cardiff*,	1904
	John Benjamin Hellier, M.D., M.R.C.S. Eng., *Leeds*	1904
	John Thomas Williams, M.D., *Treharris*,	1904
425	William Brown, M.B., Ch.B., *Braemar*,	1904
	John Hepburn Lyell, M.D., C.M., *Perth*,	1904
	Henry Hugh Robarts, M.D., Ch.B., *Musselburgh*,	1904
	Thomas Garnet Stirling Leary, M.B., Ch.B., *Australia*,	1904
	Robert Balfour Barnetson, M.B., Ch.B., *Portobello*,	1904
430	James Lochhead, M.B., Ch.B., *Earlston*,	1904
	Arthur Charles Strain, M.B., Ch.B., *Blairgowrie*,	1904
	Lewis Beesly, L.R.C.P. Ed., F.R.C.S. Ed., *St Leonard's-on-Sea*,	1904
	James Crawford Gibb Macnab, M.B., F.R.C.S. Ed., *Dysart*,	1904
	Andrew Alexander Hall, M.B., Ch.B.,	1905
435	Robert William Lessel Wallace, M.B., Ch.B., *Liverpool*,	1905
	Alfred Thom Gavin, M.B., C.M., *Dunaskin*,	1905
	Alastair MacGregor, M.D., C.M., *Market Harborough*,	1905
	Edmond Frost, M.D., C.M., *Eastbourne*,	1905
	Edith Cochrane-Brown, M.B., Ch.B., *New Zealand*,	1905
440	James Brownlee, M.D., Ch.B., *Middlesbrough*,	1905
	William Joseph Maloney, M.B., Ch.B.,	1905
	Peter M'Ewan, M.B., Ch.B., *Perth*,	1905
	George Douglas Mathewson, M.B., Ch.B.,	1905
	Henry Grey Brown, M.B., Ch.B.,	1905
445	Richard James Harley, M.D., L.R.C.P. & S.Ed., *Murrayfield*,	1905
	Andrew Fleming, M.B., Ch.B., *Corstorphine*,	1905
	Robert William Craig, M.B., Ch.B., *Ford*,	1905
	Henry John Dunbar, M.D., Ch.B.,	1905
	Richard Alfred Blake, M.B., Ch.B., *Pretoria, South Africa*,	1905
450	John Herbert Gibbs, F.R.C.S.Ed.,	1905
	Alice Marion Hutchison, M.D., Ch.B.,	1905
	Barbara Martin Cunningham, M.B., Ch.B.,	1906
	W. T. Chouhall, M.D., *Sydney*,	1906
	Alexander Angus Martin, F.R.C.S.Ed., *North Shields*,	1906
455	James Andrew Gunn, M.B., Ch.B.,	1906
	James Lawson Russell, M.B., Ch.B., *Todmorden*.	1906
	Archibald M'Kendrick, L.R.C.P. & S.Ed., *Kirkcaldy*,	1906

		Date of Admission.
	Archibald Scott, M.B., C.M., *Broxburn*,	1906
	Archibald Simpson, M.B., Ch.B., *Darlington*,	1906
460	Hirjee Nowon Anklesaria, L.R.C.P. & S.Ed.,	1906
	Archibald Cotterell M'Master, M.B., Ch.B.	1906
	Arthur James Lewis, M.B., Ch.B., *Southport*,	1906
	Herbert Park Thompson, M.D., Ch.B.,	1906
	Samuel Davidson, M.D., C.M., *Kelso*,	1906
465	William Fowler Godfrey, M.B., C.M.,	1906
	H. St John Randell, M.B., Ch.B., *Cape Colony*,	1906
	Kaikhuson Dadabhoy, F.R.C.S.Ed., L.R.C.P.Ed.,	1906
468	William Joseph Baird, M.B., Ch.B., *Earls Barton*	1906

ORDINARY FELLOWS.

ARRANGED ALPHABETICALLY.

(*a.*) LIFE MEMBERS.

	Adam, Dr George Rothwell, 84 Collins St., Melbourne, Aus.,	1879
	Anderson, Dr John, Newholme, Pitlochry,	1896
	Ballantyne, Dr Harold S., Ashton, Eskbank, Dalkeith,	1897
	Barbour, Dr A. H. Freeland, 4 Charlotte Square,	1879
5	Barclay, Dr William John, Invercargill, New Zealand,	1899
	Brock, Dr G. Sandison, 2 Via Veneto, Rome,	1894
	Cavanagh, Dr Francis, 396 Ecclesall Road, Sheffield,	1903
	Chipman, Dr W. W., 285 Mountain St., Montreal, Canada,	1895
	Chouhall, Dr William T., 233 Macquarie St., Sydney, Australia,	1906
10	Cochrane-Brown, Dr Edith, Strathmore, Christ Church, New Zealand,	1905
	Craig, Dr John, 71 Bruntsfield Place,	1900
	Craig, Dr William, 71 Bruntsfield Place,	1870
	Croom, Dr David Halliday, 13 Torphichen St.,	1903
	Croom, Prof. Sir John Halliday, 25 Charlotte Square,	1870
15	Cumming, Dr John 20 Gilmore Place,	1896
	Dobell, Dr C. B., 1 Royal Well Terrace, Charlton, Cheltenham,	1904
	Dumat, Dr Henry Aylmer, 7 Devonshire Place, Durban, Natal, South Africa,	1898
	Fleming, Dr Andrew M., C.M.G., Salisbury, Rhodesia,	1904
	Fowler, Dr Simson, Waverley, Juniper Green,	1892
20	Frost, Dr Edmund, Chesterfield, Meads, Eastbourne,	1905
	Gibson, Dr R. Wilson, Town Head House, Orton, Tebay,	1903
	Grant, Dr Lewis, Neston, Cheshire,	1896
	Hart, Dr D. Berry, 13 Charlotte Square,	1877
	Inch, Dr Robert, Gorebridge,	1887
25	Johnston, Dr D. W., P.O. Box 2022, Johannesburg, Transvaal,	1892
	Livingston, Dr George R., 47 Castle Street, Dumfries,	1898
	M'Arthur, Dr W. Taylor, 959 S. Figueroa St., Los Angeles, California,	1901
	M'Brearty, Dr J. Wilson, Greymouth, West Coast, New Zealand,	1899
	M'Farlane, Dr Hilda M.,	1901
30	Macnab, Dr James, C. G., The Towers, Dysart,	1904

		Date of Admission.
	Maddox, Dr Ralph H., I.M.S., c/o Messrs Thomas Cook & Son, Ludgate Corner, London, E.C.,	1887
	Martin, Dr Christopher, Cleveland House, George Road, Edgbaston, Birmingham,	1888
	Melville, Dr Kenmure, 2 Nile Grove,	1900
	Morgan, Dr T. H., Gympie, Queensland, Australia,	1895
35	Mules, Dr P. Henry, Bishopdale, Nelson, New Zealand,	1903
	Pereira, Dr A. A. Jervis, Consul de Grèce en Mozambique, Lourenço Marques, Delagoa Bay, South Africa,	1888
	Ponder, Dr Charles F., Glenorchy, Hobart, Tasmania,	1892
	Ranking Dr J. E., Tunbridge Wells,	1881
	Ross, Dr James F. W., 481 Sherbourne Street, Toronto, Canada,	1889
40	Simpson, Dr G. F. Barbour, 50 Melville Street,	1898
	Simpson, Dr W. Petrie, Viewbank, Bathgate,	1892
	Struthers, Dr John, Nqamakwe, Transkei, South Africa,	1895
	Vatve, Dr Gopal Govind, care of H.H. The Rajah of Miraj, Bombay, India,	1894
	Wells, Dr A. Simpson, c/o Dr Sharp, Mowbray, Cape Town, South Africa,	1903

(*b.*) ANNUAL SUBSCRIBERS.

45	Aarons, Dr S. Jervois, 14 Stratford Place, London, W.,	1896
	Adams, Dr Russell G. W., Langley Dale, Blenheim, New Zealand	1904
	Affleck, Dr J. O., 38 Heriot Row,	1869
	Ainslie, Dr A. C., 49 Minto Street,	1898
	Aitken, Dr C. J. Hill, 19 Church Street, corner of Oxford Street, East London, South Africa,	1902
50	Alexander, Dr W. B., 8 Blenheim Place,	1882
	Allison, Dr J., Fuller House, Kettering, Northampton,	1888
	Anderson, Dr Fred. T., the Grange, Grinshill, Shrewsbury,	1892
	Andrew, Dr James, 2 Atholl Crescent,	1868
	Anklesaria, Dr H. N., 5 Roseneath Street,	1906
55	Archibald, Dr J., Hazelden, Wimborne Road, Bournemouth,	1877
	Armitage, Dr J. A., 58 Waterloo Road Wolverhampton,	1886
	Armour, Dr E. F., 6 Bruntsfield Terrace,	1889
	Aspland, Dr W. H. Graham, Church of England Mission, Peking, China,	1901
	Baildon, Dr F. J., 42 Hoghton Street, Southport,	1887
60	Baird, Dr W. J., Earls Barton, Northants,	1906
	Balfour, Dr Andrew, 23 Abercorn Terrace, Portobello,	1877
	Ballantyne, Dr A., Ashton, Eskbank, Dalkeith,	1870
	Ballantyne, Dr J. W., 24 Melville Street,	1883
	Barnardo, Dr F. A. F., Capt. I.M.S., Ferozepore, Punjab, India,	1899
65	Barnetson, Dr R. Balfour, 31 Morton Street, Portobello,	1904
	Barrington, Dr Fourness, 213 Macquarrie Street, Sydney, Australia,	1884
	Barry, Dr W. J. M., 29 Plymouth Road, Penarth, Glamorgan,	1898
	Bateman, Dr F. J. Harvey, Heath End, Blackheath, Lond., S.E.,	1898
	Beatty, Dr Samuel, Craigvar, Pitlochry,	1888
70	Beesley, Dr R. W., 135 Deane Road, Bolton,	1894
	Beesly, Dr Lewis, 21 West Hill, St Leonard's-on-Sea,	1904
	Bell, Dr J. Lumsden, Driffield, Yorkshire,	1884

		Date of Admission.
	Bentley, Dr G. H., Kirkliston,	1877
	Beveridge, Dr Robert, 9 James Place, Leith,	1896
75	Black, Dr J. Watt, 15 Clarges Street, Piccadilly, London, W.,	1863
	Blaikie, Dr R. H., 10 Mayfield Gardens,	1888
	Blair, Dr J. A., 16 Windsor Terrace, Newcastle-on-Tyne,	1887
	Blake, Dr R. A., Pretoria, South Africa	1905
	Bleloch, Dr A., 26 Gilmore Place,	1876
80	Boddie, Dr G. P., 73 Bruntsfield Place,	1889
	Booth, Dr William, 2 Minto Street,	1891
	Borrowman, Dr Philip G., Galvelmore, Crieff,	1893
	Boxill, Dr N. L., Buttalls, St George, Barbados,	1888
	Boyd, Dr J. St Clair, Chatsworth House, Malone Rd., Belfast,	1887
85	Brand, Dr Eden, Bellfield, Banchory,	1903
	Brewis, Dr N. T., 23 Rutland Street,	1883
	Brewis, Dr R. Adams, The West Gate, Dursley, Gloucestershire,	1888
	Broad, Dr B. W., The Sanitorium, Cardiff,	1895
	Brodie, Dr T. Scott, 21 Belhaven Terrace, Wishaw,	1900
90	Brodie, Dr W. Haig, 6 St Stephen's Road West, West Ealing, London, W.	1881
	Brown, Dr H. Grey, 1 Cluny Avenue,	1905
	Brown, Dr William, Braemar,	1904
	Brownlee, Dr James, 7 Seaton Terrace, Linthrope Road, Middlesbrough,	1905
	Buist, Dr J. W., 1 Clifton Terrace,	1877
95	Buist, Dr R. C., 166 Nethergate, Dundee,	1895
	Bunting, Dr W. Hartley, 22 Islington Row, Edgbaston, Birmingham,	1900
	Burton, Dr Thomas J., Port Hedland, West Australia,	1896
	Butchart, Dr C. A., 52 Leith Walk, Leith,	1894
	Cairns, Dr W. Murray, 67 Catherine Street, Liverpool,	1892
100	Calder, Dr H. L., 60 Leith Walk, Leith,	1882
	Callender, Dr D. A., Hazelmere, Toft Road, Knutsford, Cheshire,	1901
	Callender, Dr D. M., 6 Rose Bank, Lancaster,	1902
	Callender, Dr T. M., Inverard, Sidcup,	1896
	Cameron, Prof. James C., M.D., 941 Dorchester Street, Montreal,	1888
105	Campbell, Dr Malcolm, 17 Walker Street,	1900
	Carmichael, Dr Edward, 21 Abercromby Place,	1887
	Carmichael, Dr E. W. Scott, 32 Rutland Square,	1899
	Carmichael, Dr James, 22 Northumberland Street,	1871
	Carruthers, Dr G. J. R., 4 Melville Street,	1901
110	Cattanach, Dr J. G., 3 Alvanley Terrace,	1893
	Chiene, Dr George L., 23 Alva Street,	1899
	Church, Dr H. M., 36 George Square,	1875
	Clark, Dr A. W. G., 28 Braid Crescent,	1901
	Clark, Dr J. A., 4 Cambridge Street,	1887
115	Clark, Dr Katherine S., Craigleith Poorhouse,	1903
	Cobbett, Dr C. N., Edmonton, Alberta, Canada,	1890
	Coromilas, Dr Georges P., 67 Minerva Street, Athens, Greece,	1894
	Cox, Dr Joshua J., 38 Deansgate, Manchester,	1876
	Craig, Dr R. W., Pathhead-Ford, Dalkeith,	1905
120	Croudace, Dr J. H., Foregate House, Stafford,	1878
	Cullen, Dr G. M., 50 Minto Street,	1890
	Cunningham, Dr Barbara M., 4 Torphichen St.,	1906
	Currie, Dr A. S., 20 Oxford Terrace, Hyde Park, London, W.,	1882
	Dadabhoy, Dr K., 5 Roseneath St.,	1906
125	Darling, Dr T. Brown, 13 Merchiston Place,	1884

		Date of Admission.
	Darling, Dr William, 2 Warrender Park Terrace,	1900
	Davidson, Dr D. G., 9 Granville Terrace,	1892
	Davidson, Dr H. S., 15 Leven Terrace,	1904
	Davidson, Dr Samuel, Kelso,	1906
130	Davies, Dr E. T., 1 St Domingo Grove, Liverpool,	1887
	Dendle, Dr Frank, Overton House, Spring Grove, Isleworth,	1892
	Deverell, Dr H. C., 12 Windsor Street,	1882
	Dewar, Dr M., 24 Lauriston Place,	1891
	Dickie, Dr J. T., 37 Lauriston Place,	1900
135	Dickson, Dr George, 9 India Street,	1867
	Dickson, Dr George, 14 Ardmillan Terrace,	1901
	Dobie, Dr D. Robertson, Heathfield, Crieff,	1894
	Donald, Dr C. W., 28 Portland Square, Carlisle,	1895
	Douglas, Dr Carstairs, 2 Royal Crescent West, Glasgow,	1890
140	Dunbar, Dr H. J., 1 Kew Terrace,	1905
	Duncan, Dr A. J., 158 Nethergate, Dundee,	1879
	Duncan, Dr A. S., Mavis Bank, Polton,	1890
	Dunlop, Dr H. M., 20 Abercromby Place,	1884
	Dunsmure, Dr J., 53 Queen Street,	1876
145	Eason, Dr John, 196 Newhaven Road, Leith,	1899
	Easterbrook, Dr A. M., Gorebridge,	1893
	Easterbrook, Dr C. C., Glengall, Ayr,	1892
	Easton, Dr Thomas, 23 East Park Terrace, Southampton,	1894
	Eden, Dr T. Watts, 26 Queen Anne Street, Cavendish Square, London, W.,	1888
150	Edington, Dr D. C., 4 Portland Place, Penrith,	1897
	Elder, Dr Eleanor, 4 John's Place, Leith,	1903
	Elder, Dr W. Nicol, 6 Torphichen Street,	1879
	Evans, Dr O. F., 20 Princes Avenue, Liverpool,	1890
	Farie, Dr G. J., Strathallan House, Bridge of Allan,	1903
155	Farquharson, Dr J. D., 242 Westgate Road, Newcastle-on-Tyne,	1890
	Farquharson, Dr J. M., 2 Coates Place,	1894
	Faulkner, Dr Hugh, St John's House, Banbury, Oxon,	1902
	Felkin, Dr R. W., 12 Oxford Gardens, North Kensington, London, W.,	1884
	Ferguson, Dr J. Haig, 7 Coates Crescent	1885
160	Ferguson, Dr P. J. H., 20 Leopold Place,	1900
	Ferguson, Dr R. T., Middlemarch, Anstruther, Fife,	1895
	Finlay, Dr W. A., 50 Trinity Road,	1880
	Fitzwilliams, Dr D. C. L., 64 Brook Street, Grosvener Square, London, W.,	1904
	Fleming, Dr Andrew, St John's Road, Corstorphine,	1905
165	Flett, Dr A. B., 60 George Square,	1903
	Forbes, Dr J. Christie, Ardveich, Liberton,	1898
	Fordyce, Dr A. Dingwall, 19 Coates Crescent,	1899
	Fordyce, Dr William, 20 Charlotte Square,	1888
	Fothergill, Dr W. E., 13 St John Street, Manchester,	1894
170	Forrester, Dr C. C., 3 Albert Terrace,	1898
	Fowler, Dr W. Hope, 5 St Vincent Street,	1900
	Fox, Dr James S., 6 Baldwin Street, St Helens,	1889
	Fox, Dr J. W., 18 Bernard Street, Southampton,	1887
	Fraser, Dr J. Hossack, Fernfield, Bridge of Allan,	1895
175	Fraser, Dr Nutting S., 205 Gower Street, St John's, Newfoundland,	1887
	Frost, Dr W. E., 6 Atholl Place,	1900
	Garbutt, Dr W. J., 1 Bournbrook Rd., Selly Pk., Birmingham	1897
	Gardiner, Dr Frederick, 9 George Square,	1900
	Gavin, Dr Alfred T., Doonlea, Dunaskin,	1905

		Date of Admission.
180	Gayton, Dr William, 11 Redbourne Ave., Finchley, Lond., N.,	1885
	Gemmell, Dr J. E., 28 Rodney Street, Liverpool,	1885
	Gibbons, Dr Sherwin, 1013 Braly Building, Los Angeles, Cal.,	1904
	Gibbs, Dr J. H., 7 Coates Place,	1905
	Gibson, Dr Cameron R., 4 Upper College Street, Nottingham,	1903
185	Giffen, Dr J. T. M., 138 Boughton, Chester,	1892
	Giles, Dr A. B., 4 Palmerston Place,	1891
	Gilmour, Dr T. F., Port Ellen, Islay,	1882
	Glegg, Dr R. Ashleigh, Public Health Office, Leith,	1901
	Godfrey, Dr W. F., 46 Cumberland Street	1906
190	Graham, Dr A., Curriebank, Currie,	1897
	Graham, Dr D. J., 26 Rutland Street,	1895
	Graham, Dr F. M., 16 Mayfield Gardens,	1894
	Graham, Dr J. Gibson, 17 Ashton Ter., Dowanhill, Glasgow,	1888
	Graham, Dr R. Balfour, Leven, Fife,	1893
195	Green, Dr John Ligertwood, 23 Minto Street,	1902
	Greene, Dr T. W. N., 45 Dartmouth Square, Leeson Park, Dublin,	1889
	Gregory, Dr W. H., North Bar Street, Beverley, Yorks,	1893
	Gunn, Dr. J. A., Materia Medica Department, University of Edinburgh.	1906
	Guthrie, Dr A. Cowan, 21 Pilrig Street,	1888
200	Hall, Dr A. A., 2 Hermitage Place, Leith,	1905
	Hall, Dr D. G., 30 Brunswick Place, Hove, Sussex,	1900
	Hamilton, Dr J. R., Elm House, Hawick,	1879
	Hamp, Dr J. Walton, Penn Road, Wolverhampton,	1886
	Hardie, Dr Mabel, High Lane, near Stockport,	1902
205	Harley, Dr R. J., Erlington, Kaimes Road, Murrayfield,	1905
	Harlin, Dr Francis W., Peak Downs District Hospital, Clermont, Queensland,	1900
	Harper, Dr R. A. J., Sheriffhall, Dalkeith,	1901
	Harvey, Dr Charles E., Kingswood, Sav-la-Mar, Jamaica, W.I.,	1889
	Harvey, Dr James, 7 Blenheim Place,	1891
210	Haultain, Dr F. W. N., 12 Charlotte Square,	1884
	Havelock, Dr J. G., Sunnyside, Montrose,	1888
	Hay, Dr Henry, 11 Great King Street,	1879
	Hellier, Dr J. B., 27 Park Square, Leeds,	1904
	Helm, Dr J. H., Clarence Cottage, Ratho,	1888
215	Helm, Dr R. Dundas, 13 Portland Square, Carlisle,	1892
	Helme, Dr G. Edgar, Gloucester House, Rusholme, Manchester,	1895
	Henderson, Dr Alexander, 21 Pitt Street,	1891
	Hewetson, Dr J., Holmfield, Reigate,	1881
	Hindmarsh, Dr Edwin, Mozufferpore, Tirhoot State Railway, Bengal, India,	1895
220	Hobson, Dr H. Overton, Villa Sakkara, Helouan, Egypt	1901
	Hoggan, Dr Robert, Liberton Park, Liberton,	1894
	Holmested, Dr C. W., Tuxford, Newark, Notts,	1900
	Hughes, Dr H. L., Llwyn-Werm, Dowlais, Glamorganshire,	1894
	Hughes, Dr P. T., Heath Asylum, Bexley, Kent,	1895
225	Hunter, Dr George, 33 Palmerston Place,	1881
	Hutcheson, Dr J., 44 Moray Place,	1888
	Hutchison, Dr Alice M., 204 Bruntsfield Place,	1905
	Inglis, Dr Elsie M., 8 Walker Street,	1901
	Jamieson, Dr Hugh, 13 Lauriston Place,	1889
230	Jamieson, Dr J. Boyd, 43 George Square,	1900
	Jardine, Dr Robert, 20 Royal Crescent, Glasgow, W.,	1897
	Jeffrey, Dr John, Glen Bank, Jedburgh,	1901

		Date of Admission.
	Johnston, Dr Robert B., Bishopyards, Penrith,	1903
	Johnston, Dr R. J., 1 Buccleuch Place,	1899
235	Johnstone, Dr R. W., 13 Torphichen Street,	1903
	Jones, Dr W. Llewellyn, 58 Thomas St., Merthyr-Tydvil,	1903
	Keay, Dr J. W., 18 Mentone Terrace,	1903
	Keiller, Prof. Wm., 210 Levy Building, Galveston, Texas. U.S.A.,	1890
	Keir, Dr I. C., The Limes, Melksham, Wilts,	1903
240	Ker, Dr Claude, B., City Hospital, Comiston Road,	1894
	Kerr, Dr J. M. Munro, 7 Clairmont Gardens, Glasgow,	1894
	Kerr, Dr J. W., 121 Trinity Road, Trinity,	1901
	King, Dr J. K., The Glen Springs Sanitorium, Watkins, New York, U.S.A.,	1884
	Kirk, Dr Robert, Rowan Bank, Bathgate,	1887
245	Kirkness, Dr J. M., 14 Dalkeith Road,	1903
	Kynoch, Professor Campbell, 8 Airlie Place, Dundee,	1892
	Lackie, Dr James, 1 Randolph Crescent,	1889
	Laing, Dr J. H. A., 11 Melville Street,	1891
	Langwell, Dr H. G., 4 Hermitage Place, Leith,	1891
250	Leary, Dr T. Garnet S., Grand Hotel, Melbourne, Australia,	1904
	Lee, Dr Herbert E., Gunnedah, N.S.W., Australia,	1892
	Lewis, Dr Arthur J., Eastfield, 44 Scarisbrick New Road, Southport, Lancashire,	1906
	Littlejohn, Professor Harvey, 1 Atholl Crescent,	1890
	Lochhead, Dr James, Earlston,	1904
255	Lockhart, Dr F. A. L., 23 Mackay Street, Montreal, Canada,	1890
	Low, Dr R. C., 87 Colinton Road,	1902
	Lyell, Dr John, 15 Marshall Place, Perth,	1901
	Lyle, Dr F. W., 97 Gordon Road, Ealing, London, W.,	1890
	Lyle, Dr R. P. Ranken, 11 Ellison Place, Newcastle-on-Tyne,	1901
260	MacArthur, Dr D. G., Aberfeldy,	1903
	M'Call, Dr John, 9 Windsor Street,	1886
	M'Callum, Dr H., Kinloch-Rannoch,	1887
	M'Cann, Dr F. J., 5 Curzon Street, Mayfair, London, W.,	1896
	Macdonald, Dr Alexander, 42 Polwarth Terrace,	1898
265	Macdonald, Dr A. G., 11 Manor Place,	1903
	Macdonald, Dr Angus, 9 Rutland Square,	1897
	Macdonald, Dr John, Marathon House, Cupar-Fife,	1902
	Macdonald, Dr W. Fraser, 16 Buckingham Ter., Glasgow, W.,	1884
	M'Ewan, Dr Peter, Burnfoot, Kinfauns, Perth,	1905
270	M'Gibbon, Dr John, 22 Heriot Row,	1902
	MacGregor, Dr Alastair, Stafford Lodge, Market Harborough,	1905
	MacGregor, Dr A. V., Durham House, West Hartlepool,	1895
	MacGregor, Dr Donald, Seaton House, Jedburgh,	1900
	Macgregor, Dr G. S., 2 Burnbank Terrace, Glasgow W.,	1888
275	M'Ilwraith, Dr Kennedy C., 54 Avenue Rd., Toronto, Canada,	1901
	Mackay, Dr George, 74 Bruntsfield Place,	1879
	Mackay, Dr W. B., 23 Castlegate, Berwick-on-Tweed,	1899
	M'Kendrick, Dr Archd., 120 High St., Kirkcaldy,	1906
	Mackenzie, Dr R., Napier, Nairn,	1887
280	Mackenzie, Dr T. C., Morningside Royal Asylum,	1900
	M'Kerron, Dr R. Gordon, 1 Albyn Place, Aberdeen,	1896
	Mackie, Dr George, Boyd's Lodge, Malvern, Worcestershire,	1900
	Mackin, Dr Patrick, 12 Ingestre St., Wellington, New Zealand,	1895
	Mackness, Dr G. O. C., Fort Street House, Broughty-Ferry,	1887
285	Maclagan, Dr D. W., Kaponga, Taranaki, New Zealand,	1901
	M'Larty, Dr Malcolm, 7 Bellevue Place,	1900
	M'Lean, Dr Archibald, Crosshouse, Kilmarnock,	1890
	Maclean, Dr Ewen, J., 12 Park Place, Cardiff,	1902

		Date of Admission.
	M'Master, Dr A. C., Australasian Club, Melbourne Place,	1906
290	Macmillan, Dr John, 48 George Square,	1897
	MacRae, Dr John, Lynwood, Murrayfield,	1893
	MacVie, Dr S., Chirnside,	1881
	M'Watt, Dr John, Duns,	1879
	Macwatt, Dr R. C., 7th Bengal Cavalry, care of Messrs Henry S. King & Co., 9 Pall Mall, London, S.W.,	1885
295	Malcolmson, Dr Alexander M., Dalveen, St John's Road, Corstorphine,	1901
	Maloney, Dr W. J., 2 Morrison Place, Piershill,	1905
	Manford, Dr J. Stanley, 1 Osborne Terrace, Newcastle-on-Tyne,	1900
	Marshall, Dr G. Balfour, 19 Sandyford Place, Glasgow,	1891
	Marshall, Dr William, Milnathort,	1884
300	Martin, Dr Angus, 25 Northumberland Square, North Shields,	1906
	Martin, Dr Charles, Dagenham House, Newton Abbot, South Devon,	1892
	Martin, Dr J. W., Charterhall, Newbridge, Dumfries,	1887
	Matheson, Dr A. A., 41 George Square,	1887
	Matheson, Dr Roderick M., 33 Buccleuch Place,	1897
305	Mathewson, Dr G. D., 25 Cluny Gardens,	1905
	Maurange, Dr Gabriel, 6 Rue de Tournon, Paris	1898
	Menzies, Dr David, 20 Rutland Square,	1877
	Messer, Dr Fordyce, Woodlands, Garelochhead,	1866
	Michael, Dr Gustave, 5 Cambridge Place, Chestergate, Regent's Park, London, N.W.,	1885
310	Millard, Dr W. W., Middlefield House, Leith Walk,	1884
	Miller, Dr Alexander, 1 Royal Terrace, Crosshill, Glasgow,	1902
	Miller, Dr W. H., 51 Northumberland Street,	1886
	Milligan, Dr D., 11 Palmerston Place,	1893
	Milne, Dr W. M., 10 Newington Road,	1898
315	Mitchell, Dr G. B., 1 Skinner Street, Whitby,	1893
	Mitchell, Dr R. M., c/o Mrs Johnston, 151 Bruntsfield Place,	1900
	Montgomery, Dr John, The Highlands, Balsall Heath, Birmingham,	1895
	Moorhouse, Dr J. Ernest, 6 Melville Terrace Stirling,	1892
	More, Dr James, Rothwell, Kettering, Northampton,	1880
320	Morison, Dr Albert E., Wellington Road, West Hartlepool,	1888
	Morris, Dr S. Glanville, Myrddin House, Mardy, Glamorganshire,	1894
	Moses, Dr O. St John, 8 Lansdowne Road, Calcutta,	1900
	Mowat, Dr John, 5 Hope Park Terrace,	1884
	Munro, Dr A. Watson, 183 Liverpool Street, Sydney, Australia,	1892
325	Munro, Dr J. Ramsay, Nat. Prov. Bank, Spalding, Lincolnshire,	1901
	Murray, Dr A. Lang, Killara, Sydney, N.S.W., Australia,	1889
	Murray, Dr D. R., 41 Albany Street, Leith,	1878
	Murray, Dr James, 1 Brandon Street,	1879
	Nairne, Dr J. Stuart, 268 Renfrew Street, Glasgow,	1889
330	Napier, Dr A. D. Leith, 28 Angas Street, Adelaide, South Australia,	1878
	Nicholson, Dr H. Oliphant, 20 Manor Place,	1900
	Ogden, Dr O. Watson, 38 Jesmond Road, Newcastle-on-Tyne,	1900
	Ogilvy, Dr Stewart Grant, Fairmont, Fauldhouse,	1895
	Oliphant, Dr E. H. Lawrence, 23 Newton Place, Glasgow,	1885
335	Orr, Dr John, Heather Lea, Clarendon Road, Eccles, Lancs.,	1887
	Orr, Dr W. Basil, 13 Braid Road,	1889
	Paterson, Dr G. Keppie, 19 Albany Street,	1882
	Paterson, Dr G. W. Simla, 147 Bruntsfield Place,	1896

		Date of Admission.
	Patton, Dr W. Scott, I.M.S., Medical Officer in Charge, C/49 Native Field Hospital, D'thola, Aden Hinterland, S. Arabia,	1901
340	Pearson, Dr C. M., 17 Alva Street,	1902
	Peddie, Dr H. Anderson, 24 Palmerston Place,	1882
	Perigal, Dr A., New Barnet, Herts,	1887
	Pirie, Dr John, 15 Ardmillan Terrace,	1888
	Playfair, Dr John, 5 Melville Crescent,	1873
345	Poole, Dr T. D., Linthwaite, near Huddersfield,	1890
	Porritt, Dr E. E., Wanganui, New Zealand,	1897
	Porteous, Dr J. Lindsay, 83 Warburton Avenue, Yonkers, New York,	1875
	Porter, Dr Frederick, 65 Morningside Road,	1904
	Potts, Dr W. A., 118 Hagley Road, Edgbaston, Birmingham,	1897
350	Prentice, Dr W. H., Brunswick Terrace, Brood Street, Pendleton, Manchester,	1901
	Price, Dr A. W. Gordon, 9 Grange Road,	1890
	Price, Dr E. F. T., 1 Middleby Street,	1890
	Primrose, Dr Alex., 100 College Street, Toronto, Canada,	1887
	Pringle, Dr J. Hogarth, 172 Bath Street, Glasgow,	1886
355	Proudfoot, Dr Thomas, 30 Lauriston Place,	1884
	Rabagliati, Dr A. H., 1 St Paul's Road, Bradford, Yorkshire,	1903
	Randell, Dr H. St John, Aliwal North, Cape Colony,	1906
	Reid, Dr W. L., 7 Royal Crescent W., Glasgow,	1880
	Reid, Dr W. Spence, Oakley, Kirkcudbright,	1880
360	Rendell, Dr Herbert R., P.O. Box 606, St John's, Newfoundland,	1882
	Rhodes, Dr J. H., Vicarage Terrace, Kendal,	1898
	Ritchie, Dr James, 22 Charlotte Square,	1880
	Ritchie, Dr W. T., 9 Atholl Place,	1899
	Robarts, Dr Henry H., 23 Bridge Street, Musselburgh,	1904
365	Roberton, Dr Ernest, Cotele House, Symond Street, Auckland, New Zealand,	1887
	Roberts, Dr Ernest T., Oaklands House, Keighley,	1890
	Roberts, Dr R. W., Glenaben, Llanuwchllyn, Bala, N. Wales,	1894
	Robertson, Dr George, Braehead, Viewfield Place, Dunfermline,	1901
	Robertson, Dr Robert, 26 Royal Circus,	1897
370	Robertson, Dr W. B., St Anne's, 101 Thurlow Park Road, West Dulwich, London, S.E.,	1870
	Robertson, Dr W. G. Aitchison, 26 Minto Street,	1889
	Robins, Dr H., Sav-la-Mar, Jamaica, W.I.,	1893
	Robinson, Dr H. Shapter, Talfourd House, 78 Peckham Road, Camberwell, London, S.E.,	1890
	Ronaldson, Dr T. R., 8 Charlotte Square,	1877
375	Rosa, Dr Albert F., 28 Pitt Street,	1893
	Ross, Dr J. W. E., 1 Clare Street, Cardiff,	1904
	Russell, Dr J. Lawson, West Lodge, Todmorden,	1906
	Russell, Dr W., 3 Walker Street,	1890
	Saleeby, Dr C. W., 13 Greville Place, London, N.W.,	1902
380	Sandstein, Dr Alfred C., The Laurels, Gloucester Street, Christchurch, New Zealand,	1898
	Saunders, Dr F. A., Grahamstown, Cape Colony, South Africa,	1885
	Schofield, Dr Linn J., Warrensburg, Mo., U.S.A.,	1893
	Scott, Dr Archibald, The Firs, Broxburn,	1906
	Scott, Dr T. R., Musselburgh,	1880
385	Secord, Dr E. R., 112 Market St., Brantford, Ontario, Canada,	1902
	Shaw, Dr C. J., Perth District Asylum, Murthly,	1903
	Shaw, Dr W. J., Cockburnspath,	1892
	Shearer, Dr Alfred, Newtown, N. Wales,	1898

		Date of Admission.
	Simpson, Dr Archibald, The Hospital, Darlington,	1906
390	Simpson, Dr F. D., 7 Kew Terrace,	1900
	Simson, Dr Harry, 36 Grosvenor Street, London, W.,	1897
	Slight, Dr J. D., 61 London Road, Leicester,	1898
	Sloan, Dr Allen T., 22 Abercromby Place,	1893
	Sloan, Dr S., 5 Somerset Pl., Sauchiehall St. West, Glasgow,	1887
395	Sloss, Dr William, Windsor, Sturt Street, Ballarat, Melbourne, Australia,	1902
	Smart, Dr David, 74 Hartington Rd., Sefton Park, Liverpool,	1882
	Smith, Dr G. H. Walton, Pendower, Oxford St., Paddington, Sydney, Australia,	1892
	Smith, Dr Gains T., 15 Church Street, Moncton, New Brunswick, Canada,	1891
	Smith, Dr James, 4 Brunton Place,	1891
400	Smith, Dr John, Brycehall, Kirkcaldy,	1885
	Smith, Dr W. Ramsay, Winchester St., East Adelaide, Aus.,	1892
	Sneddon, Dr William, 58 Bonnygate, Cupar-Fife,	1888
	Somerville, Dr C. W., London Mission, Wuchang, by Hankow, Central China,	1902
	Somerville, Dr James W., 12 Abbotsford Road, Galashiels,	1902
405	Spalding, Dr William, Gorebridge,	1867
	Spence, Dr R., St Ninians, Burntisland,	1878
	Spence, Dr William, Sydney House, Dollar,	1884
	Stephen, Dr W. A., Loftus-in-Cleveland, Yorkshire,	1894
	Stevens, Dr John, 2 Shandon Street,	1894
410	Stewart, Dr J S., 15 Merchiston Place,	1884
	Stewart, Dr R., 25 George Square,	1885
	Stirling, Dr R., 4 Atholl Place, Perth,	1892
	Story, Dr B. S., Wellington, New Zealand,	1898
	Strain, Dr Arthur C., Rosebank, Rattray, Blairgowrie,	1904
415	Stumbles, Dr H. M., Amble House, Amble, Northumberland,	1903
	Sturrock, Dr J. F., Arima, Broughty-Ferry,	1887
	Sullivan, Dr John, 34 Gilmore Place,	1902
	Taylor, Dr David R., St Helen's, Ayton,	1896
	Taylor, Dr William, 12 Melville Street,	1868
420	Taylor, Dr W. Macrae, 12 Melville Street,	1895
	Teacher, Dr C., Craigend, North Berwick,	1887
	Temple, Dr G. H., Ailanthus, Weston-super-Mare,	1888
	Tennant, Dr John, Ashby, near Doncaster,	1902
	Thatcher, Dr C. H., 8 Melville Crescent,	1877
425	Thin, Dr Robert, 25 Abercromby Place,	1891
	Thomas, Dr G. Crewdson, 34 West Hill, Sydenham, London, S.E.,	1899
	Thompson, Dr F. E., 20 Park Avenue, Montreal, Canada,	1902
	Thompson, Dr Herbert P., c/o Mackay, 52 Morningside Road,	1906
	Thompson, Dr James L., Castlemaine, Victoria, Australia,	1894
430	Thompson, Dr John A. Douglas, Comberton House, Halesowen, Warcestershire,	1902
	Thomson, Dr A. D. R., 19 Bridge Street, Musselburgh,	1877
	Thomson, Dr John, 14 Coates Crescent,	1887
	Thomson, Dr J. Stitt, Castle Hill House, Lincoln,	1877
	Thomson, Dr T. J., 31 Morningside Road,	1902
435	Thyne, Dr T. J., 16 Randolph Crescent,	1887
	Tod, Dr John, 69 Ferry Road, Leith,	1892
	Tough, Dr F. W. K., 17 East Hermitage Place, Leith,	1901
	Tristan, Dr R. J., 28 Carolgate, Retford, Notts,	1887
	Underhill, Dr C. E., 8 Coates Crescent,	1872
440	Underhill, Dr Frederick T., 1373 Barclay Street, Vancouver, British Columbia,	1885

		Date of Admission.
	Underhill, Dr T. Edgar, Dunedin, Barnt Green, Worcestershire,	1879
	Vassie, Dr Alexander H., 98 Priory Road, West Hampstead, London, N.W.,	1891
	Vickery, Dr W. H., 1 Bristol Terrace, Beech Grove, Newcastle-on-Tyne,	1892
	Wade, Dr George, St John's, Melrose,	1893
445	Wallace, Dr Abraham, 39 Harley Street, London, W.,	1879
	Wallace, Dr R. W. L., Infirmary for Children, Catherine St., Liverpool,	1905
	Watson, Dr B. P., 6 Castle Terrace,	1902
	Watson, Dr Douglas Chalmers, 22 Coates Crescent,	1897
	Watson, Dr P. H., 2 Victoria Square, Newcastle-on-Tyne,	1887
450	Watson, Dr R. H.,	1896
	Waugh, Dr John, 36 Finsbury Pavement, London, E.C.,	1881
	Webster, Dr A. D., 5 Blacket Avenue,	1881
	Webster, Prof. J. C., 706 Reliance Building, 100 State Street, Chicago, U.S.A.,	1889
	White, Dr A. L., Tantallon, Manchester Road, Castleton, Manchester,	1903
455	Wilcockson, Dr G. Morton, Whitley Cross, Reading,	1893
	Wilkie, Dr James, Selville House, Portobello,	1897
	Wilkinson, Dr George, 3 Dingle Hill, Liverpool, S.,	1889
	Will, Dr J. C. Ogilvie, 17 Bon-Accord Square, Aberdeen,	1867
	Williams, Dr J. T., Bronygar, Treharris, Glamorganshire,	1904
460	Willcox, Dr F. Mayes, 8 Strathearn Road,	1902
	Wilson, Dr James, 53 Inverleith Row,	1889
	Wise, Dr Robert, 290 Ivydale Road, Nunhead, London, S.E.,	1890
	Wood, Dr Thomas, 182 Ferry Road,	1886
	Woodside, Dr J. T., Stewartstown, Co. Tyrone,	1898
465	Wright, Dr W. F., Bonnington Mount, Bonnington Terrace,	1887
	Yoe, Dr Richard T., 2103 Floyd Street, Louisville, Kentucky, U.S.A.,	1891
	Young, Dr H. C. Taylor, 209 Macquarie Street, Sydney, New South Wales,	1900
468	Young, Dr Peter A., 25 Manor Place,	1871

CONTENTS.

I.—COMMUNICATIONS RELATING TO OBSTETRICS.

PAGE

Note on a Case of Exomphalos with Accidental Hæmorrhage and delayed Second Stage. By A. H. F. Barbour, M.D., F.R.C.P.E. 22

Withdrawal of the Liquor Amnii: a Cause of Fœtal Death and Placental Changes; an Experimental Investigation in the Rabbit. By B. P. Watson, M.D., F.R.C.S.E. . . . 25

Delivery of the Hydrocephalic Fœtus by Spinal Tapping: a Second Case. By J. W. Ballantyne, M.D., F.R.C.P.E., F.R.S.E. 66

A Case of Eclampsia followed by Melancholia, which was treated with Thyroid Gland Substance. By W. E. Fothergill, M.A., B.Sc., M.D. 80

Note on a Case of Pregnancy in a Bicornuate Uterus. By W. Fordyce, M.A., M.D., F.R.C.P.E. 115

Clinical Experience of Ectopic Gestation and Allied Conditions. By F. W. N. Haultain, M.D., F.R.C.P.E. 134

Note on a Case of Intraperitoneal Hæmorrhage occurring during Labour; Recovery. By D. A. Callender, M.B. . . . 149

Eclampsia during Pregnancy; Death from Suppression of Urine; Extensive Infarction of both Kidneys. By Professor Jardine, M.D. (Ed.), F.F.P.S. (Glas.) 155

Eclampsia during and after Labour; Recovery after upwards of two hundred Fits. By Professor Jardine, M.D. (Ed.), F.F.P.S. (Glas.) 162

PAGE

Malignant Endocarditis during Pregnancy, with an illustrative Case. By Professor Sir HALLIDAY CROOM, M.D., F.R.C.P.E., F.R.C.S.E. 200

Some of the Physiological Changes in the Maternal Organism during Pregnancy and their Significance. By H. OLIPHANT NICHOLSON, M.D., F.R.C.P.E. 213

Irregular Manifestations of Puerperal Sepsis. By Professor WILLIAM STEPHENSON, M.D., F.R.C.S.E. 270

II.—COMMUNICATIONS RELATING TO GYNÆCOLOGY.

Pudendal Myxoma. By G. F. BARBOUR SIMPSON, M.D., F.R.C.P.E., F.R.C.S.E. 60

Pyuria in the Female. By FREDERICK PORTER, M.B., C.M. . . 92

Abdominal Hysterectomy for Acute Puerperal Metritis and Acute Salpingitis, with Record of a successful case. By J. HAIG FERGUSON, M.D., F.R.C.P.E., F.R.C.S.E., F.R.S.E. . . 123

Note on a Case of Broad Ligament Cyst, with twisted pedicle, and Blood Extravasation into the Cellular Tissue along left Ovarian Vein. By A. H. F. BARBOUR, M.D., F.R.C.P.E. . 171

Abdominal Hysterectomy for Inversion of the Uterus; Fatty Degeneration of the Inverted Portion. By A. H. F. BARBOUR, M.D., F.R.C.P.E. 173

Hernia of the Uterine Adnexa, with a Personal Experience of Seven Cases. By E. SCOTT CARMICHAEL, M.B., C.M., F.R.C.S.E. . 178

Post-Partum Ovariotomy. By Professor KYNOCH, M.B., F.R.C.P.E., F.R.C.S.E. 190

III.—MISCELLANEOUS COMMUNICATIONS.

Valedictory Address. By N. T. BREWIS, M.B., C.M., F.R.C.P.E., F.R.C.S.E. 2

What Position should Gynæcology hold in the Medical Curriculum? By F. W. N. HAULTAIN, M.D., F.R.C.P.E. . . . 50

The Use of the Stereoscope in the Teaching of Obstetrics and Gynæcology. By G. F. BARBOUR SIMPSON, M.D., F.R.C.P.E., F.R.C.S.E. 88

PAGE

A Plea for Operative Interference in Intracranial Hæmorrhages in the New-born. By E. Scott Carmichael, M.B., C.M., F.R.C.S.E. 105

A Case of Heteroplastic Ovarian Grafting followed by Pregnancy and a Living Child. Query—Who is the Mother? Communicated by Professor Sir Halliday Croom, M.D., F.R.C.P.E., F.R.C.S.E. 194

The "Byrth of Mankynde"; its Author and Editions. By J. W. Ballantyne, M.D., F.R.C.P.E., F.R.S.E. 232

TABLE SHOWING SPECIMENS EXHIBITED AT MEETINGS.

I.—OBSTETRICAL AND TERATOLOGICAL.

	PAGE
Fœtus, anencephalic, with history of Syphilis (Dr T. Wood)	103
Fœtus, anencephalic, with history pointing to Syphilis (Dr J. W. Ballantyne)	104
Fœtus, aprosopous (Dr J. W. Ballantyne)	79
Fœtus, hydrocephalic, delivered by spinal tapping (Dr J. W. Ballantyne)	59
Fœtus, papyraceous (Dr Haultain)	154
Fœtus, partially flattened, not a twin (Dr J. W. Ballantyne)	59
Hydatid Mole, retained *in utero* about 10 months (Dr Haig Ferguson)	122
Placenta and Membranes, showing velamentous insertion of cord (Dr J. W. Ballantyne)	59
Uterus, puerperal, with multiple abscesses in wall, removed by hysterectomy (Dr Haig Ferguson)	122
Uterus, removed by Porro-Cæsarean section for inoperable cancer of the cervix (Dr Brewis)	120

II.—GYNÆCOLOGICAL.

A. AFFECTIONS OF UTERUS.

(1) Fibroid Tumours—

(*a*) *Simple*—

Fibroid, cervical, removed by abdominal myomectomy (Dr Brewis)	56
Fibroid tumour removed by supravaginal hysterectomy (Dr Brewis)	57

PAGE

(1) FIBROID TUMOURS—*continued.*

(*a*) *Simple—continued.*

Fibroid tumours (3) removed by abdominal hysterectomy (Dr Barbour) 79

Fibroid, subperitoneal cervical, removed for pressure on bladder (Dr Haultain) 104

Fibro-myoma, cervical, and an ovarian cyst occurring together (Dr Barbour) 105

Fibroid, large cervical, of Uterus, removed by panhysterectomy (Dr Brewis) 121

Fibroid Tumour, interstitial cervical, removed by panhysterectomy (Dr Haultain) 153

Fibroid Uteri (4) removed for symptoms at or after the menopause (Dr Barbour) 188

Fibroid, rapidly growing, soft œdematous, removed by abdominal hysterectomy (Dr Lackie) 189

Fibroids complicating Pregnancy :—

Fibroid, large, multilobular, removed *during pregnancy* by supravaginal hysterectomy (Dr Brewis) 56

Fibroid Tumour, removed *during pregnancy*, by supravaginal hysterectomy (Dr Brewis) 55

Pregnant Uterus, complicated with Fibroids, removed by hysterectomy (Dr Haultain) 121

Uterus, gravid, of about 6 months, with large fibrocellular tumour (intraligamentary), removed by panhysterectomy (Dr Haultain) 153

(*b*) *Degenerated—*

Sloughing Fibroid Tumour removed by supravaginal hysterectomy (Dr J. Haig Ferguson) 57

Thin-walled Cystic Uterine tumour (degenerated fibromyoma) removed by abdominal hysterectomy (Dr Haultain) 104

(*c*) *With malignancy—*

Fibroid Uterus associated with Sarcoma of the Cavity, removed by panhysterectomy (Dr Haultain) . . 122

Malignant adenoma of body of Fibroid Uterus, removed by abdominal hysterectomy (Professor Kynoch) . 186

PAGE

(1) Fibroid Tumours—*continued.*

(c) *With malignancy—continued.*

Sarcomatous degeneration of Uterine Fibroid, abdominal hysterectomy (Professor Kynoch) . . . 187

(2) Malignant Disease of Uterus—

Uterus removed by hysterectomy for Cancer of body (Dr Brewis) 57

Uterus with deciduomo malignum removed by vaginal hysterectomy (Dr Haig Ferguson) 154

Uterus with carcinoma of body, removed by vaginal hysterectomy (Professor Kynoch) 186

Uterus with malignant adenoma of body removed by abdominal panhysterectomy (Professor Kynoch) . . 186

(3) Other Uterine Conditions—

Complete Prolapsus Uteri, removed from patient who died of acute peritonitis (Professor Kynoch) . . . 187

Polypus, removed 7 weeks after birth of twins, probably a blighted third embryo (Dr Haultain) . . . 104

Uterus removed by vaginal hysterectomy for hæmorrhage (Dr Lackie) 58

Uterus containing two mucous polypi removed for hæmorrhage after the menopause (Dr Barbour) . . . 188

B. AFFECTIONS OF THE OVARIES.

Cyst, large ovarian, with twisted pedicle, removed by ovariotomy during pregnancy (Dr Brewis) 57

Ovary (left), removed for encephaloid cancer (Dr Brewis) . . 119

Ovary, with small dermoid (Dr Brewis) 120

Papillary Graafian Follicle Cyst removed by ovariotomy (Dr Brewis) 121

Tumour, ovarian, with twisted pedicle (Dr Brewis) . . . 57

C. TUBAL AFFECTIONS.

Pyosalpinx (small), removed 3 months after confinement (Dr Lackie) 189

PAGE

Tube (left), from case of repeated ectopic gestation (Professor Kynoch) 187

Tubes and ovaries removed for double pyosalpinx with ovarian abscess (Dr Haultain) 104

Tubo-ovarian cyst from one side and a parovarian tumour and hydrosalpinx from the other (Dr Lackie) . . . 189

Uterus and Tubes with a tubal gestation (Dr Haultain) . . 104

D. AFFECTIONS OF BROAD LIGAMENT.

Cyst of left Broad Ligament removed by abdominal section (Dr Brewis) 57

Intraligamentary Fibroid removed from patient suffering from arthritis deformans (Dr Lackie) 189

III.—MISCELLANEOUS.

Copy of the rare work, Raynalde's "Byrth of Mankynde" (Dr J. W. Ballantyne). 59

Obstetrical and Gynæcological Bag with Steriliser (Dr Haig-Ferguson) 122

Sections of Kidneys, the seat of Infarction (Professor Jardine) . 154

TRANSACTIONS

BOSTON MEDICAL
NOV 17 1906
LIBRARY.

EDINBURGH OBSTETRICAL SOCIETY,

FOR SESSION LXVII., 1905–1906.

MEETING I.—NOVEMBER 8, 1905.

DR N. T. BREWIS, *President, in the Chair.*

I. *The Treasurer* (*Dr Wm. Craig*) made his Annual Statement, which is given below:—

INCOME.

Balance from Session 1903-1904,				£548 13 1
Arrears,	£11	0	0	
Bank Interest on Deposit Receipts,	4	11	10	
Interest on Consols,	6	0	8	
Entrance Fees from 16 new Ordinary Fellows,	16	16	0	
Annual Contributions from 373 Ordinary Fellows,	93	5	0	
Composition for Life-Membership from Six Ordinary Fellows,	31	10	0	
Transactions sold,	5	1	4	
				168 4 10
				£716 17 11

EXPENDITURE.

Address to Royal College of Surgeons,	£5	5	0	
Bank Cheque-Book,	0	2	6	
Corporation Duty,	0	12	6	
Income Tax,	0	6	9	
Epsom College,	5	5	0	
Shorthand Reporters,	7	7	0	
Commission to Collector,	1	13	6	
Door-keeper's Salary,	1	12	0	
Oliver & Boyd's Account for Vol. XXX. of Society's *Transactions* (550 copies),	86	9	0	
Oliver & Boyd's account for Printing Billets, Postages, etc.,	25	6	6	
Rent of Rooms and Carriage of Books,	4	2	0	
Waterston & Sons' Account,	14	0	0	
The Secretaries and Editor for Postages,	0	10	0	
Dr Barbour Simpson for Illustrations	1	0	0	
				£153 11 9
Balance to New Account,[1]				563 6 2
				£716 17 11

[1] Of this Balance, the sum of £250, 10s. 6d. is invested in 2½ per cent. Consols.

The accounts were audited by *Dr Dewar* and *Dr Keppie Paterson*, and found correct.

Dr Berry Hart moved a hearty vote of thanks to the Treasurer, which was unanimously accorded.

II. The Society then proceeded to the election of Office-bearers for the present Session, and the President announced the result as follows:—*President*, Dr J. W. Ballantyne; *Vice-Presidents* (*Senior*), Professor Sir Halliday Croom; (*Junior*), Dr Berry Hart; *Treasurer*, Dr Wm. Craig; *Secretaries*, Dr Lamond Lackie and Dr Barbour Simpson; *Librarian*, Dr Haultain; *Editor of Transactions*, Dr Angus Macdonald; *Members of Council*, Professor Simpson, Dr W. Fordyce, Dr Thos. Wood (Leith), Dr Oliphant Nicholson, Dr N. T. Brewis, Dr Munro Kerr, Dr Freeland Barbour, Dr Haig Ferguson.

III. The following gentlemen were elected Ordinary Fellows of the Society:—W. J. Maloney, M.B., Ch.B., 2 Morison Place, Piershill; Peter M'Ewan, M.A., M.B., Ch.B., Burnfoot, Kinfauns, Perth; G. D. Mathewson, B.Sc., M.B., Ch.B., 12 Mayfield Terrace, Edinburgh; Henry Grey Brown, M.D., C.M., 1 Cluny Avenue, Edinburgh; R. J. Harley, L.R.C.P. and S.E., 10 Salisbury Road, Edinburgh; Andrew Fleming, M.B., Ch.B., St John's Road, Corstorphine; Robert William Craig, M.B., Ch.B., Pathhead, Ford; Henry John Dunbar, M.D., 1 Kew Terrace, Edinburgh; R. A. Blake, M.B., Ch.B., c/o Law, 13 Spottiswoode Street, Edinburgh; J. H. Gibbs, F.R.C.S.E., 7 Coates Place, Edinburgh.

IV. VALEDICTORY ADDRESS.

By N. T. Brewis, F.R.C.S.Ed.

Ladies and Gentlemen, Fellows of the Edinburgh Obstetrical Society,—No one ever entered on the high and responsible

duties of the office of President of this venerable Society with such a complete sense of inadequateness as I did two years ago. True, I felt encouraged by the hearty send-off which my genial and accomplished predecessor gave me, and also by the deep sense I had of your kindness; still I could not but feel that I was undertaking duties which might prove too high for me. In glancing back I congratulate myself that my term has passed pleasantly and profitably, and for being able to make this happy reflection, I am, in the first instance, indebted to the Society for its indulgent forbearance with all my shortcomings; and secondly, to the able assistance and wise deliberation of the Council in all matters concerning the Society's welfare. I feel that we owe a special debt of gratitude to the active and courteous gentlemen who have filled the Secretariat, and to them I tender the thanks of the Society. Much of the success of the Society depends on their activity, and we have been fortunate in having our work so well arranged and so successfully carried out by Drs Fordyce, Lamond Lackie, and Barbour Simpson. By their foresight, their knowledge of the affairs of the Society, and their unvarying courtesy, all the work has been accomplished with smoothness, regularity, and the utmost pleasantness. Personally, my indebtedness to these gentlemen is very great, and the very agreeable relations which have existed between them and the Chair will always be to me a delightful memory. Additional thanks are due to Dr Lackie for the highly successful manner in which he has performed his duties as Editor of the *Transactions:* only those who have had experience in the work know how onerous it is, and Dr Lackie deserves not only our thanks, but merits our congratulations on the prompt and efficient manner in which he has executed these duties.

But while we are justly entitled to congratulate ourselves on the success which is attached to the literary side of our proceedings, we must not forget how much the prosperity of

our Society is due to the masterly way in which our financial affairs are managed. For a great number of years this department has had the advantage of being under the care of one who combines great geniality of disposition with exact business principles, and under whose guidance the prosperity of the Society has become sufficiently evident to attract the attention of the Income-Tax authorities. Dr Craig's excellent work and his unvarying kindliness ensure him the warmest regard of the Society.

Further evidence of the Society's progress is manifested by the additions which are yearly made to our roll of membership. During the last two years there has been an accession of thirty-seven Ordinary Fellows. The addition of every new Fellow adds to the importance of the Society; it signifies that there is one more professional brother to interest and to teach. It behoves us, therefore, ever to keep in mind the responsibility of the Society to throw new light over the field in which we work, and through our *Transactions* to spread new truths, in the first place, to our own Fellows, and secondly, to the medical world at large.

We cannot, however, contemplate the increased growth in our membership, and of our sphere of usefulness, without at the same time grieving that the Society has in the same period of time had removed from its roll several distinguished and respected members. The death-roll during my term of office numbers one Honorary, two Corresponding, and ten Ordinary Fellows.

Dr G. S. Engelmann, of Boston, U.S.A., was elected an Honorary Fellow of our Society in July 1903, and he died suddenly on November 17, 1903, at the comparatively early age of fifty-five. He was a graduate of Washington University and of Berlin, and was one of the most highly respected obstetricians in the United States. He is widely known as the author of many valuable contributions to the literature of

his specialty, and also as one who took an active interest in the International Congress of Obstetrics and Gynæcology.

From our roll of Corresponding Fellows we miss the name of the venerable and highly esteemed *Dr Samuel Lawrence*, of Montrose, who died at the advanced age of eighty-eight. He became a licentiate of the Royal College of Surgeons in 1835, *i.e.*, seventy years ago. In 1863 he gave a contribution, which was published in the *Edinburgh Medical Journal*, entitled "Statistical Report of 1000 Midwifery Cases"; in 1885 he published a paper on "Podalic Version, its Place in Obstetrics"; and in the third volume of our *Transactions* there appears a contribution from him read before our Society on February 14, 1872, on "A Case of Large Congenital Cranial Tumour." He was elected a Corresponding Fellow of our Society in 1849, and at the time of his death was the third oldest Fellow on our roll, Dr A. Peddie and Dr George Keith being his seniors.

The greatest blow which our Society has suffered for years occurred when *Milne Murray* was taken from us. His untimely death leaves a blank which all those who knew him well feel can never be filled. The sad circumstances attending his long illness are fresh in your memories, and it would ill become me to recall them. Nor can I trust myself to attempt with my pen to add anything to what has already been said with such befitting grace by Professor Simpson. His work, his brilliant talents, his genuine originality, his fortitude, the beauty of his character, and the greatness of his heart, we enjoyed and admired whilst he lived amongst us, and now that he is gone the remembrance of them will be cherished by us as long as life lasts.

In the death of *Dr Peter Young* we lost one who took an active share in the work of the Society. He was admitted a Fellow in 1859. Two years later he was appointed one of the secretaries; in 1876 he was elected vice-president, and at a

later period he acted as librarian for a term of six years. His communications on "Vaginal Enterocele," "Graviditas Serotina et Præcox," "Dangerous Hæmorrhage from the External Genital Organs during and after Labour," "Pulmonary Thrombosis in a Puerpera," are all well-written papers of much clinical interest. He carried on a large general practice, and for years lectured on Midwifery and Diseases of Women in the Edinburgh Medical School.

We have now to place on record the removal by death from our roll of six Fellows who though, with one exception, were not active participators in the affairs of the Society, were men who from their intrinsic worth we were proud to consider our Fellows. They were, one and all, men who lived and laboured ably, faithfully, and unselfishly in their own sphere, getting their chief recompense from the satisfaction which work well done brings, and from the love and trust which they won from those they strove to serve.

Dr Alexander Matthew, of Corstorphine, was a conspicuous example of such a type of man. He has been described as a most friendly, courteous, unselfish, hard-worked, and highly valued medical man, and those who had the privilege of his friendship knew how true an estimate this is of him.

Dr Robert Somerville, of Galashiels, was a most genial and lovable man, with a fine sense of humour and a highly cultured mind. The charming presidential address which he a short time ago delivered to the Harveian Society, in which he gave a delightful appreciation of the giants of his student days—Goodsir, Syme, Simpson, and Bennet—is fresh in the recollection of most of us. He was intensely interested in everything pertaining to the profession of teaching, and he was never more happy than when giving reminiscences of his old teachers. He was chairman of the School Board of Galashiels for years, and spent an immense amount of time and energy in the cause of education in that town, and his exertions were much appre-

ciated by the community. In everything concerning the public welfare of Galashiels he took an active interest; in the erection of the Public Library and in the establishment and administration of the Cottage Hospital he was the leading spirit, and in his latest years he was engaged in a scheme for providing a public institution for the treatment of consumption. He was president of the Border Branch of the British Medical Association, and represented it on the Council from 1893 to 1903. To the Society's *Transactions* he contributed one paper, entitled "Two Cases of Puerperal Hæmatocele." At the time of his death he was in his seventieth year, and was the oldest practitioner in Galashiels.

Dr Robert Lucas, of Dalkeith, died in October last, in his fifty-ninth year. By the integrity of his character and the faithfulness of his life work he worthily upheld the dignity and usefulness of his profession. He had distinct gifts of head and of heart, which gave to his personality an abiding interest and charm. Like Dr Somerville he was prominent as a public man, and was ever ready to take his share in any movement that was for the benefit of his town and the highest interest of his fellows. His connection with the Militia was long and honourable, and he had reached the rank of Surgeon-Lieutenant-Colonel when he died. He was a member of the School Board of Dalkeith for many years, and occupied the Provost's chair for a term of office. He died in the very midst of activity and usefulness, and was mourned by the whole community of the district in which he practised.

Dr James Jamieson, who died on the 3rd of last November at the age 64, joined the Society in 1866. In the early volumes of the *Transactions* his name frequently appears as a partaker in the discussions, and in 1872 he was the contributor of a paper on "A Case of Vaginal Rupture." He served on the Council, and from 1875 to 1879 he acted as our first librarian. In the midst of hard professional

work he found time to read widely and to keep abreast of the times. He was a man of much geniality, was most methodical in all his ways, and had a great love of order. He was a warm advocate of ether as an anæsthetic, and invented a special apparatus for its administration. Among his many kindly traits was one which showed his great sympathy for the afflicted, in that he regularly devoted part of his time to the benevolent work of reading to the blind.

Dr Alexander Black joined the Society in 1881. He was a man of humane and generous impulses, whose simplicity of character, racy good humour, fine literary and artistic tastes, gave a charm to his companionship and endeared him to many friends. For years he acted as Surgeon to the Eye, Ear, and Throat Hospital, and at that institution, at the Royal Dispensary, and in general practice devoted much of his time to the poor.

Dr W. A. Johnstone Alexander was one of our younger Fellows, being elected in 1900. A few years ago he commenced practice in the city, and rapidly obtained a large clientele. His industry, high professional accomplishments, and sympathetic nature were much appreciated by his patients and by all who knew him.

The last death that I have to record is a very sad one—that of a bright young life cut off on the very threshold of usefulness. *Miss Mabel Ross* is the first Lady Fellow who has been removed from our roll by death. Dr Elsie Inglis, who knew her well, has been good enough to give me the following notes:—"Miss Mabel Ross, who died at Leith Hospital, in September 1904, from enteric fever, after an illness of only a few weeks, had graduated the year before. She was a student of singular promise, keen and interested in her work, a woman of wide culture and of marked public spirit. The Medical College for Women owed much to her during the five years of her student life. One of her fellow-students

remarked of her, 'The great thing about her was her public spirit; there was nothing that concerned the College which did not interest her.' She served for two years on the Students' Committee, which is the equivalent of the Students' Representative Council, and during one year of the time was president. The Athletic Club owed its origin to her, her idea being to bring students of various years in touch with one another. She had a very charming personality, which made her popular with her contemporaries and won the devotion of her patients. At Leith Hospital, where she held the posts first of Out-door Surgeon and then of Assistant Resident Physician during the year that intervened between her graduation and her death, she did excellent work that seemed to promise much for the future. Her death, came with startling suddenness, as she seemed to be making good progress towards recovery, and her loss is one that will long be felt by the very wide circle of all classes with which she came in contact."

In the time which remains to me this evening it should be my duty, as it would be my pleasure if able to do so, to give a brief retrospect of all the work that has been accomplished by the Society during my tenure of office. The work, however, has been of so high an order that I feel incompetent to do justice to such a task, and I must therefore be content with some cursory remarks on points which have interested me most and from which I have been a learner. I will first refer to certain of the communications relating to Obstetrics.

The obstetrical conditions which call for rapid delivery are, from their serious nature, of overwhelming importance. They furnish instances in which the obstetrician, if he is to save life, must act promptly; and therefore it is of the greatest moment that the method of interference which he adopts should be the most suitable for the individual case, and any

effort on the part of the obstetrician to make the methods and the indications of these methods clear is of the greatest value. The Society has had three masterly papers on the subject presented to it.

The first paper to which I will refer is that of Dr Munro Kerr, in which he introduced to the Society Dührsen's method of rapid delivery by what is called Vaginal Cæsarean Section. He narrated the case of a patient, 5½ months pregnant, who on account of continuous vomiting was brought to a condition of such extreme feebleness that she seemed at the point of death. The cervix was completely closed and extremely rigid, so Dr Kerr promptly, and very properly, performed the operation of vaginal Cæsarean section and saved the patient. The whole operation of separating the bladder, splitting the cervix, and delivering the fœtus and placenta took four minutes. He showed the operation to be one of great simplicity, and in giving his opinion as to its indications he certainly did not err by claiming too much.

In the elaborate clinical record of eight cases of complicated labour treated by Bozzi's dilator, Dr J W. Ballantyne reports three cases in which labour was complicated by eclampsia, one by albuminuria and rigidity of the cervix, one by contracted pelvis, one by narrow pelvis and post-maturity, one by hydramnios, placenta prævia, face presentation, and anencephaly, and one by accidental hæmorrhage. The first three of these were severe eclamptic cases; Bozzi's dilator was used with the object of obtaining rapid delivery, and Dr Ballantyne is to be congratulated on saving all the mothers and two of the children, the third child being non-viable.

Sir Halliday Croom, in his extremely instructive paper, records two cases of Cæsarean section for eclampsia, in which he considered that they offered no alternative to the treatment

which he adopted. In Case No. 1, the vagina was very narrow and of extremely small capacity. The patient was a primipara, aged 20. The cervix was thick, dense, and hypertrophic, and was absolutely undilatable by finger or instrument. (Bozzi's instrument was unknown at the time.) The case was a severe one and the patient's condition critical, and immediate delivery offered the only chance to the life of mother and child. Porro-Cæsarean section was performed, and the patient died six hours afterwards from an eclamptic seizure. The kidneys were extracted, and showed extreme cloudy swelling and early catarrhal nephritis.

Case No. 2 occurred in a primipara, aged 46, and was also one of severe eclampsia. The cervix was enormously thickened and hypertrophied, and the pelvis was contracted to the first degree. Dilatation of the cervix was abandoned chiefly for want of time, and Cæsarean section was performed. The child was saved, but the mother died on the third day. One feels tempted to draw conclusions from the series of cases I have just read of the relative merits of the three operations, but, in my opinion, such would be of little value, as every case differs in some respect and is a law to itself.

The new operation of Hebotomy, or lateral section of the pubes, recently introduced by Gigli for the same grades of pelvic deformity to which symphysiotomy is applicable, and incurring less risk from laceration and hæmorrhage, was performed for the first time in this country by Dr Berry Hart; and though the operation in this instance was not followed by the recovery of the patient, the case selected, and the satisfactory manner in which the operation was performed, led one to hope that it will become recognised in the future as a useful and correct procedure in properly selected cases.

Professor Jardine, in a very able and useful contribution, gave us clinical notes of twenty-eight cases of obstructed

labour occurring during six months that he was on duty in the Glasgow Maternity Hospital. There were eight cases of induction of labour, all performed in the interests of the child; and Dr Jardine, in his comments, in contrasting the operation with symphysiotomy and Cæsarean section, maintains that it gave a smaller maternal mortality than either of these operations, and that it is a perfectly justifiable operation in properly selected cases, especially in the hands of general practitioners who are not experienced in the major operations of symphysiotomy or Cæsarean section.

Of the operation of symphysiotomy, of which Dr Jardine gave four examples, he is not greatly enamoured. He points out that the hæmorrhage, and the almost inevitable laceration of the soft parts, and the difficult after-treatment, are serious drawbacks to the operation.

The cases of Cæsarean section recorded are ten in number. One was performed for inoperable cancer of the cervix, and the remainder for contracted pelvis. All the mothers were saved. This is a record of which Dr Jardine may be justly proud, and entitles him to the heartiest congratulations of the Society.

Any device which makes for asepsis in midwifery practice is worthy of approbation, and, therefore, I think Dr J. W. Ballantyne's effort to produce, in the form of an obstetric satchel, an apparatus which will ensure asepsis in the armamentarium required at labour, is a step in the right direction. I take it that it is the ideal of the accoucheur to have all labour conducted with as complete asepsis as obtains at a surgical operation. The difficulties of obtaining this perfection are so great that it behoves the obstetrician to make sure that any hindrance to attain the ideal is not his fault. And when women recognise that every practitioner is in earnest on this point, they will realise that it must surely be to their advantage to have their confinements conducted under

conditions of strict cleanliness. It is then they will come forward and do all in their power to assist the medical man to attain his ideal.

I am sure the Council is to be congratulated on the subject which was selected for discussion in conjunction with the Glasgow Obstetrical and Gynæcological Society in the Summer Meeting. The meeting was numerously attended, and it was gratifying to note that not only was our sister Society well represented, but that a number of our country members—men whose views and experiences the Society was anxious to get—came and took part in the discussion. The meeting was a most enjoyable one, not only because of the deeply interesting and significant nature of the subject—a subject about which many obstetricians hold views of their own—but also for the re-union of friends which the meeting occasioned. It was a matter of some regret, however, that for want of time a number of members, who desired to take part in the discussion, were debarred from doing so. This limited time has, at most of our summer meetings, hurried and curtailed debate, and I think it would be well if, in the future, arrangements could be made to have rather longer meetings.

If the subject chosen for discussion, "The Use and Abuse of Midwifery Forceps," was a happy one, the Council's selection of the introducer was equally happy. I feel certain the theme could not have been handled with better judgment or greater eloquence than it was by Professor Kynoch.

At the opening meeting of the last session, Dr Ballantyne described how he successfully treated an after-coming hydrocephalic head by spinal paracentesis, and at the same meeting Dr Ranken Lyle gave an interesting description of a rare case of Cæsarean section at term in a patient who had two uteri and two vaginæ. A myomatous tumour grew in one uterus, and was so firmly impacted in the pelvis as to necessitate delivery of the child from the other uterus by Cæsarean

section. On the successful management of such a case Dr Lyle well merits our congratulations.

Later in the session Dr Ballantyne described a case of severe eclampsia in which lumbar puncture was performed. He considers it may find a sphere of usefulness in those cases of eclampsia in which the chief therapeutic indication is to control the convulsions, so as to gain time for the application of other methods.

Decapsulation of the kidney as practised by Edebolds of New York was incidentally mentioned, and in the discussion, splitting of the kidney was suggested as worthy of trial in severe eclamptic cases.

The contribution of "Germ-Content of the Uterus and Vagina during the Normal Puerperium," written by Dr Brownlee of Stockton-on-Tees, and read by Dr Buist, was one which the Society was very glad to receive. In it Dr Brownlee gave a review of the results and opinions of various writers, and added a series of observations conducted by himself in twenty normal puerperal women. The conclusions he arrived at were:—

1. That the genital passages of women are normally free from pyogenic cocci, which may cause puerperal septicæmia.

2. The same cannot be said regarding organisms aërobic and anaërobic, which, while not actually pyogenic, may yet be capable of causing the slighter fevers of the puerperium.

3. That gonococci may be found in the puerperal uterus, even in cases running an apparently normal course.

4. That antiseptic douching before, during, and after labour is to be considered in all ordinary cases not only unnecessary, but actually dangerous.

The first gynæcological contribution given during my term of office was a paper of high scientific interest, and of much practical value, by Dr Scott Carmichael. From it I am sure we all learned much. He showed that leucocytosis taken in

conjunction with other signs and symptoms is a valuable aid to diagnosis in cases where the surgeon is in doubt, and where it may be his interference is of momentous importance to the patient. I think he convinced us that every surgeon in a doubtful abdominal or pelvic condition has failed to make a thorough examination of his patient if he omit the leucocyte count.

Among other points brought out in this paper, we learn that in acute inflammatory cases a persistent leucocyte count of 20,000 usually means suppuration. We also learn that the leucocytosis is proportionate to the virulence of the infection and the resistance of the individual. That, for instance, when the patient is overwhelmed with toxines, the tissues fail to react and leucocytosis fails to appear, and under these conditions it would be folly to operate. On the other hand, sepsis with hyperleucocytosis often means a favourable progress, and indicates the exact time for surgical interference. Dr Carmichael shows also that leucocytosis is of great value in determining the micro-organism of suppuration in tubal affections. To know beforehand whether pyosalpinx is streptococcal, gonococcal, or tuberculous, is of such importance to the surgeon in guiding him as to his method of operating that, if the information that leucocytosis gives us in differentiating these conditions is found to be reliable, then I consider it to be one of the most valuable advances which has been made recently in the interests of gynæcological science and practice. It has been found that streptococcal pyosalpinx gives a high degree of leucocytosis, which would lead the surgeon to exercise the greatest care in dealing with the swelling. In such a case, Dr Carmichael recommends that he should operate *per vaginam*. Tuberculous pus causes no leucocytosis, and gonorrhœal causes but slight increase of white cells, and surgeons would in these cases operate with more freedom by the abdominal route.

In Vol. I. of our *Transactions* a paper appeared on "Pessaries," by the late Dr Keiller. Since then only one paper on the subject has been presented until last winter, when our Hon. Fellow, Dr Granville Bantock, gave one entitled "In Defence of the Pessary." The presence of one of our Hon. Fellows made the occasion one of unusual interest. The paper was read before a full house, and the subject evoked a lengthy discussion. Such a meeting showed us the expediency of occasionally having papers on minor ailments which can be discussed not only by the specialist, but by the practitioner.

The Society is to be congratulated on having in its *Transactions* an article of such outstanding excellence as the one presented by Dr Haultain, entitled "A Clinical and Pathological Analysis of a Successive Series of 120 Abdominal Hysterectomies for Fibro-myomata." The paper is one of the ablest that has been written on the subject, and the information it contains clinically and pathologically will be found of the greatest valve to tyro and experienced alike, from the incontrovertible array of facts and sound conclusions which the author has given us. From the technical standpoint also the contribution is of the highest worth, as giving the more important methods of detail of an operator whose success is surpassed by none.

It was to be expected that sooner or later the condition of the blood-vessels themselves should come to be investigated in cases of bleeding from the uterus, and in Dr Barbour's well-written paper, entitled "Climacteric Hæmorrhage due to Sclerosis of the Uterine Vessels," he gave a contribution of much value in showing that hæmorrhage from the uterus can be caused solely from the affection of those vessels without the disease being present elsewhere. The paper is valuable in helping us to clear up some difficult not-to-be-explained bleedings at the menopause.

Dr Barbour Simpson gave us a clear and excellent de-

scription of a rare case of complete prolapsus uteri which was irreducible and which terminated fatally, not from the displacement, but from the purulent peritonitis which was associated with it.

Dr Haultain, in a valuable paper on "Malignant Uterine Complications of Fibro-myomata of the Uterus," demonstrated clearly and conclusively the relationship of malignant disease to fibro-myomata. He proved that the two conditions have an almost entirely independent origin, and but slightly affect one another; that fibroids may occasionally undergo sarcomatous degeneration; that they in no way influence the development of cervical cancer; and that they but slightly predispose to the development of malignant disease in the body of the uterus.

Professor Simpson brought forward the interesting question of heredity in ovarian cystoma, in a paper in which he described three cases operated on by him on members of one family, the mother and two daughters, in which he supported his claim that there are many cases of heredity in ovarian disease.

Dr Malcom Campbell, in his tentative and suggestive research on "Pathological Condition of the Ovaries as a Possible Factor in the Etiology of Uterine Fibroids," gives the results of his observations on ovaries which were associated with fibroid tumours. He found that in these ovaries the function of ovulation was in abeyance, and that retrograde pathological processes were going on in connection with the Graafian follicles and corpora lutea. He drew an interesting parallel between the ovary of pregnancy and the ovary associated with fibroids, and enunciated the interesting suggestion that as in one the increasing ovarian internal secretion leads to the uniform and symmetrical hyperplasia of the uterus, so in the other the pathological internal secretion may lead to an asymmetrical and irregular hyperplasia of the tissues of the uterine wall. The impossibility, at present, of formulating a definite

theory, he points out, is due to our ignorance as to whether the ovarian changes are primary and causative, or secondary, the result of the presence of the uterine fibroid.

In Sir Halliday Croom's paper, entitled "Curiosities of Curetting, specially with regard to Cancer," he discussed the difficulties in regard to the diagnosis of cancer, dealing first with the difficulty of its early recognition, and emphasising the heavy responsibility of the family physician in recognising the early symptoms and in indicating to the patient the appropriate treatment. He then narrated a series of most instructive cases, illustrating the importance to be attached to early hæmorrhage and to early curetting, and to microscopic examination of the tissues removed. He commented on the difficulty of distinguishing microscopically between cases of cancer and of the products of pregnancy. Among the curiosities of curetting he includes a case of acquired atresia following the operation, a case of perforation, and finally he narrates two cases of patients, aged 25 and 40 respectively, who since the operation have ceased to menstruate and have remained sterile.

Dr Haultain, in an important contribution, gave us a series of cases of axial-rotation in its relation to the pelvic generative organs, and in illustration narrated four interesting cases, one of them being an instance of the extremely rare condition of acute strangulation caused by axial-rotation of the uterus. He discussed the differential diagnosis, and pointed out that symptoms of acute strangulation may be simulated by intracystic hæmorrhage and by threatened tubal abortion. He cites a case in which the latter condition was diagnosed, but disproved by abdominal section, when a small twisted ovarian tumour was found with a ruptured vein in the pampiniform plexus.

Dr Freeland Barbour described a case of the rare condition of sarcoma of the cervix, and on the same evening gave an extremely valuable communication on endothelioma of the

ovary, based on the microscopical examination of two tumours which he had removed from the same patient. In the microscopical sections which he exhibited he was able to trace step by step the development of the sarcomatous cells from the endothelium of the lymphatics.

Table of Specimens Exhibited.

Gynæcological Specimens.

Uterine tumours.

Simple—

Fibroids, 43 (2 with calcareous degeneration).
Fibro-cystic tumours, 3.
Double uterus, 1.
Uterus removed for bleeding, 1.
Myxoma uteri, 1.

Malignant—

Cancer of body, 6.
Cancer of cervix, 6.
Sarcoma of uterus, 4.
Adenoma malignum, 1.
Fibroid with adeno-carcinoma, 1.

Epithelioma of the glands, 1.
Epithelioma of the vulva, 1.
Vaginal fibroid, 1.
Myxoma of the labium, 1.

Ovarian tumours.

Simple—

Ovarian cysts, 11.
Solid ovarian tumours, 5.
Dermoid cysts, 6 (1 double).
Papillary cysts, 2.
Ovary removed for pain, 1.
Normal ovary with twisted pedicle, 1.

GYNÆCOLOGICAL SPECIMENS—*continued.*

Malignant—

Ovarian tumours, 4.

Parovarian cysts, 1.

Tumours of the broad ligaments, 2.

Tubal diseases.

Pyosalpinx, 5.

1 tuberculous.

1 with tubal pregnancy.

1 with ovarian disease (abscess).

Hydrosalpinx, 1 (double).

Kidney tumours.

Pyonephrosis, 2.

Tuberculous kidney, 1.

Mixed-celled sarcoma round the right kidney, 1.

Supra-renal capsule tumours, 2.

Vesical calculi, 3.

Intestinal concretion simulating ovarian, 1.

OBSTETRICAL SPECIMENS.

Abortions—Missed, 1.
Complete cast with ovum, 2.
Blighted ovum, 1.

Tubal pregnancies, 3 (1 with pyosalpinx).

Anencephalic fœtuses, 4 (1 with exomphalos, 1 with hydrorachitis).

Cyclops fœtuses, 2 (1 as a twin).

Hydrocephalic fœtuses, 2 (1 with spinal tapping, 1 siren with spina-bifida).

Exomphalos, 3.

Uniovular twins, 1.

Child forty-one years in the abdomen, 1.

Cord conditions—

Velamentous insertion, 3.

OBSTETRICAL SPECIMENS—*continued.*

Cyst of the cord, 1.
Succenturiate placenta, 1.
Marginate placenta, 1.
Obstetric satchels, 2.
Modification of Braun's hook, 1.
Bronze medal of Leipzig Obstetrical Society, 1.

There have been exhibited at our meetings during the last two years 150 specimens; 120 of that number may be classed as gynæcological, the remaining 30 as obstetrical. More than one-half of the gynæcological specimens were in illustration of various diseased conditions of the uterus. Simple fibroids of the uterus numbered 43. Of tumours showing fibro-cystic degeneration three were shown. Examples of cancer of the body of the uterus were six in number. A like number were cases of cancer of the cervix, and there were four specimens of sarcoma, one case of adenoma malignum, and one of adeno-carcinoma complicating a fibroid tumour. Out of the total number of uterine specimens shown, one-fourth were malignant.

Of ovarian diseases we had thirty exhibits. Simple cysts numbered eleven, papillary cysts two, solid tumours five, dermoid cysts six, while four tumours were malignant. The proportion of malignant to simple ovarian tumours was 1 to 7.

Diseased uterine appendages were represented by six specimens, five of which were examples of pyosalpinx and one of hydrosalpinx.

Of obstetrical specimens, amongst others there were three of abortions, three of tubal pregnancy, four of anencephalic fœtus, two of cyclops fœtus, two of hydrocephalic fœtus, three of exomphalos, and one child which had been forty-one years in the abdomen.

Nothing more is wanted to testify to the life of the Society and the activity of its Fellows than the number of specimens

exhibited. The exhibition of specimens is now a distinguishing feature of our proceedings, and is of the greatest utility, not only from the interest which the specimens themselves produce, but as indicating the paths along which gynæcological surgeons and obstetricians are pursuing their work.

In conclusion, I have again to offer my heartfelt thanks for the indulgence and kindness which it has been my lot to receive from my Fellows of the Obstetrical Society during my term of office. Your kindness has made my work light and pleasant, and I shall always be able to look back on the time I occupied the Chair with feelings of real satisfaction.

I do not think I can more fittingly close my remarks than by quoting the words of one of our Hon. Fellows: "Wherever I go I notice that wherever men cordially support one another —and there is a great deal of warm affection among men in the profession—there medical work flourishes and medical science stands at its very highest."

Dr Berry Hart proposed a vote of thanks to the President for his address.

V. NOTE ON A CASE OF EXOMPHALOS WITH ACCIDENTAL HÆMORRHAGE AND DELAYED SECOND STAGE.

By A. H. F. Barbour, M.D.

Last September a patient was sent to the Infirmary by Dr Craig of Pathhead. She was in the seventh month of pregnancy, but had felt no fœtal movement for some time. She had had three children, carrying the first and third to full-time, while the second died *in utero* and was expelled some weeks after its death, about the seventh month. On examining the patient the parts of the fœtus were palpated with difficulty, and there was no active movement; the fœtal heart could not be heard.

It looked like a case of death of the fœtus *in utero*, and the occurrence of this on a previous occasion suggested some constitutional cause. The patient was put on iodide of potassium and told to await events. Five weeks later, Dr Craig was called in the early morning, to find the patient lying in a pool of blood and water, the cervix scarcely dilated, and no pains present. Owing to hospital duties, I was unable to go and see her at once. It looked like accidental hæmorrhage, and that the bleeding might cease with the rupture of the membranes, so I advised the administration of ergot, with plugging the vagina if hæmorrhage continued; for one could not exclude placenta prævia. I heard later that the case was going on without further bleeding. Later on I received another telegram that the breech had descended, but that the head was arrested at the brim. On arriving two hours later, I found that the cause of delay was a swelling on the abdomen of the child, which was grasped by the incompletely dilated cervix; with some difficulty and after considerable manipulation, Dr Craig delivered the fœtus, chiefly by suprapubic pressure. The placenta followed the child without hæmorrhage. The fœtus shows the condition of exomphalos with anencephaly and spina bifida. The placenta was small and pale. It was bloodless except on the side which lay furthest from the os, where the maternal part was broken up by a hæmorrhage the size of a small hen's egg, the blood-clot extending between the membranes, the rent in which showed that the placenta had not been prævia.

Cases of exomphalos are not so rare as one would think. I find sixteen reported in our own *Transactions*. One of the first cases was made the subject of an interesting paper by *Emeritus* Professor Simpson, in which, through defect of the abdominal wall, the viscera themselves presented: since reading that paper he has recorded two other cases of a similar nature. The flexure of the spine favoured the presentation of the viscera

in these cases. Where the abdominal wall was present, and the condition one of ventral hernia, the most frequent form of presentation was the breech, as in this case; though I note a case reported by Dr Ballantyne, in which the head presented and the child was delivered by forceps. Only exceptionally was the abdominal tumour a cause of delay, as in the present case.

Perhaps the more interesting clinical feature in this case, and which ought to have been mentioned in the title of the paper, was the occurrence of an accidental hæmorrhage after the death of the fœtus, and which was the immediate exciting cause of labour. Hæmorrhages into the placenta after the death of the fœtus occur not infrequently in cases of extra-uterine gestation; but as far as I know, they are not common where the placenta is growing *in utero*. The bleeding in this case was so considerable that it soaked the sheet on which the patient was lying and various cloths which were applied. It lasted only a short time, and while it continued was a distinct source of danger. It seems to have stopped as soon as pains came on. Unfortunately the placenta was not kept, so as to have the vessels examined. I mentioned that the death of a previous child *in utero* suggested the possibility of a constitutional condition as the cause of the death of this one. On going more carefully into the patient's history, I could find no evidence of this; and we have in the malformation of the fœtus sufficient explanation of its death in this instance. Why certain malformations of the fœtus should cause premature labour is not self-evident; but there is no doubt of the clinical fact that labour comes on usually between the seventh and eighth month. I find that in all of the cases, except one, which have been shown to our Society with their clinical history, labour was at the seventh or eighth month. The exception was a case in which such a fœtus was born twin with a living one which went full-time.

There is another cause of ante-partum hæmorrhage in cases of exomphalos with deficient abdominal wall, and which has led to these cases being mistaken for placenta prævia. Professor Simpson refers to it in his paper. But the blood in these cases comes from the fœtal viscera, and its occurrence is of interest only from the point of view of diagnosis. The bleeding is also limited in extent. In this case we have a severe hæmorrhage, maternal in origin, and due to some change in the placenta after the death of the fœtus. I should have mentioned that while there was evidence of this single, considerable, recent hæmorrhage, the rest of the placenta did not show older hæmorrhages.

VI. WITHDRAWAL OF THE LIQUOR AMNII: A CAUSE OF FŒTAL DEATH AND PLACENTAL CHANGES; AN EXPERIMENTAL INVESTIGATION IN THE RABBIT.

By B. P. Watson, M.D., F.R.C.S. (Edin.), Freeland Balfour Fellow, late House Surgeon, Royal Maternity Hospital and University Gynæcological Ward, Royal Infirmary, Edinburgh.

The experiments upon which the following paper is based were undertaken in the first instance in the hope that they might add something to our knowledge regarding the origin of the *liquor amnii*. Although they have failed to throw much light on this difficult problem, they have given interesting results with regard to fœtal death and the changes which the dead fœtus and its placenta undergo while retained *in utero*. To a consideration of these the main part of what follows is devoted.

The animals selected for experiment were rabbits. They were chosen because of the facility with which they can be obtained and bred, and also because the structure of the placenta has been very fully worked out by Minot (1),

Duval (2), and Chipman (3), the last named especially giving a most minute and detailed account of the whole gestation period.

Rabbit's Uterus.—The rabbit's uterus consist of two cornua, entirely distinct and separate from each other except at their vaginal extremities, where the apposed walls are fused for a short distance. Each opens separately into the common vagina. At the other extremity they are continuous with the Fallopian tubes, which are convoluted and much narrower than the uterus proper. The muscular coat of the cornua is in two layers, an outer longitudinal and an inner circular. These layers are of equal thickness, and between them is some loose connective tissue.

The mucous lining is raised into a series of folds, two of which, situated one on either side of the mesometrium, are especially large and are known as the "placental" folds, as it is by their hypertrophy that the maternal part of the placenta is formed when an impregnated ovum comes in contact with them. Ovulation is said as a rule to occur a few hours after insemination, and from three to nine ova are discharged at one time. These entering the oviduct are fertilised, and continue to travel down the duct into the uterus, which they reach about the third day. The ova are spaced out at more or less regular intervals in each cornu, and as the intervening parts remain of almost the same diameter as before impregnation, the horn becomes divided up into a series of sacs, each containing an ovum. As a rule the sacs in the two cornua are unequal in number, and all the sacs may not be of the same size, this being due to the fact that some of the ova are later in being fertilised than the others. In carrying out the experiments care was always taken to select for observation and control sacs which were of equal size, and so presumably of the same age. As pregnancy advances, the sacs increase in size at the expense of the intervening portions of the horn. Parturition occurs thirty days after insemination.

Method of Experiment.—The method of carrying out the experiments was as follows. The animal having arrived at the

desired period of gestation, which varied in different cases, and which was calculated from the day of insemination, it was anæsthetised with ether and fixed down on its back to a holder. The abdomen was shaved, and thoroughly cleansed with a solution of lysol. A piece of fine gauze wrung out of warm lysol solution was then spead over the animal so as to cover the abdomen and limbs. All instruments used were thoroughly sterilised. A linear incision 1½ in. in length was made in the middle line above the pubes, and the abdomen opened. The uterine cornua, with their gestation sacs, at once appeared in the wound, and were expressed from the abdomen with as little direct handling as possible. It was necessary to have all the sacs completely in view in this way, in order to select for experiment and control only those which were of the same size, and also in order to be certain of the exact position in the horn of the sac punctured. A warm, moist piece of gauze was placed over the extruded sacs, and one, or in some cases two or more, sacs were selected for aspiration. The syringe used was a ordinary glass serum syringe, with a fine sharp needle. The needle was made to enter near the roof of the sac, and thus well away from the placenta, and great care was always taken to avoid injuring the fœtus either by the needle or by the fingers which steadied the sac. The fluid was then withdrawn, the amount varying according to the stage of gestation. A slight leakage occurred in some cases after the withdrawal of the needle.

In the earlier experiments this was all that was done, but in the later ones, owing to the necessity of obtaining a standard by which to judge of the placental changes induced, one of the normal sacs was in every case excised complete. This was not done in the earlier experiments for fear of causing abortion, but when this did not follow the simple operation with the necessary handling of the uterus during it, excision of a control sac was tried. The results were entirely satisfactory. The

only animal which aborted during the investigation was one which was almost at full-time at the date of operation. It is a remarkable fact that the rabbit's uterus tolerates such interference, a point which will be discussed later. The method of excising the sac was a very simple one. A double ligature was passed through the mesometrium opposite the centre of the sac, and this was tied on each side between the sac to be removed and that on each side. The sac was then cut away above the ligature. After returning the uterus into the abdomen, the abdominal wall was closed with through-and-through horse-hair sutures, and a collodion dressing was applied.

The animals, as a rule, made a perfect recovery, only one showing any sign of sepsis, and it was at once destroyed. After the lapse of a certain number of days, varying from three to fourteen in the different experiments, the animal was killed by the administration of chloroform. The abdomen was immediately opened and the entire uterus excised, the vagina and mesometrium being previously ligatured to prevent the escape of blood from the placentæ. The uterus was hardened in formalin for twenty-four to forty-eight hours, and then the different sacs were cut across transversely, and their naked-eye characters noted. They were then prepared for embedding in paraffin, and cut in serial sections.

Eight complete experiments in all were done, the period of pregnancy varying from the tenth to the twenty-first day, and the interval which elapsed between the operation and the death of the animal from three up to fourteen days. The stage of gestation at which the operation was performed did not at all affect the nature of the changes induced in the fœtus and placenta, so that the experiments form a progressive series in so far as these changes are concerned. Two of the experiments were performed at the twelfth and one at the tenth day of gestation, and in these the fluid aspirated was the yolk sac fluid. The amnion in the rabbit is not completely closed in

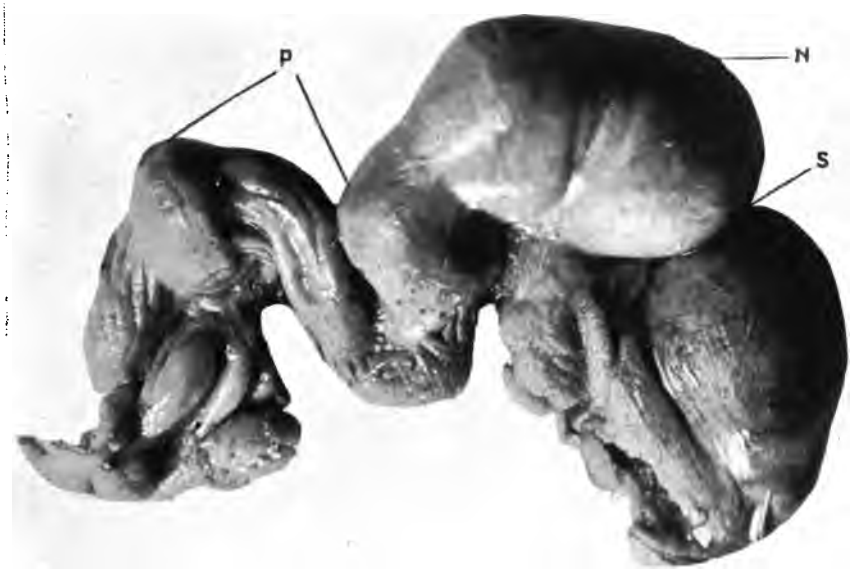


Fig. 1.

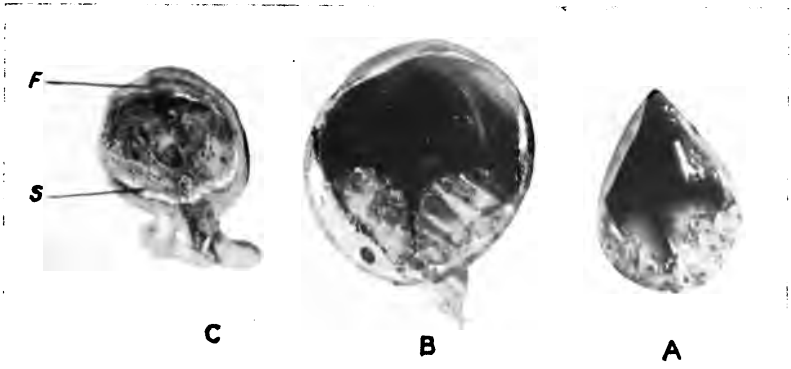


Fig. 2.

[*Face page* 28.

Fig. 4.

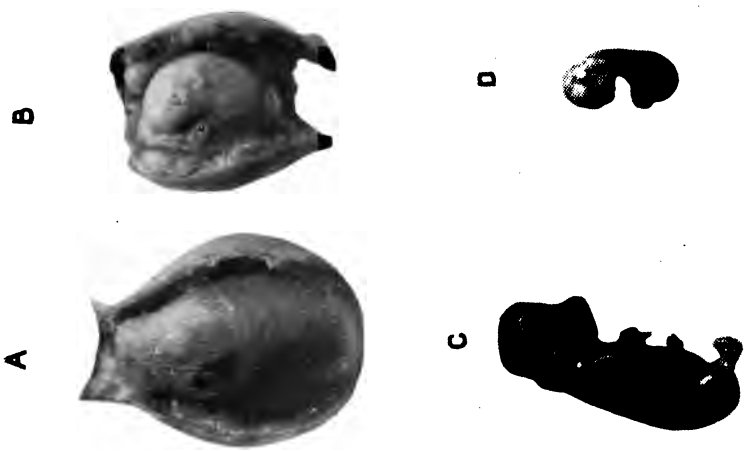


Fig. 3.

[*Face page* 28.

until the tenth day, and does not become distended with fluid till after the twelfth, and up to this time the great part of the ovum consists of the yolk sac and its fluid contents. In the other five experiments, one performed at the fourteenth, one at the fifteenth, two at the sixteenth, and one at the twenty-first day of gestation, the fluid withdrawn was the *liquor amnii*, which at these dates occupies almost the entire space between the placenta and roof of the sac, the non-vascular part of the yolk sac wall becoming absorbed and the yolk sac ceasing to exist. The results obtained by the withdrawal of the yolk sac fluid in no way differed from those got by the aspiration of the *liquor amnii*.

Such in brief was the method of experiment. Without entering into a detailed account of each case, the general results obtained and the conclusions to be drawn therefrom will now be indicated.

Results.—When the animals were killed the sacs which had been aspirated were always found to be much smaller than the normal sacs. This was due to the fact that there had been no re-secretion of the *liquor amnii*, and that the fœtus had died and so ceased to grow. This contrast between the normal and punctured sacs is well seen in Figures 1 and 2.

The sequence of events after the withdrawal of the fluid, were it yolk sac fluid or *liquor amnii*, was (1), death of the fœtus and subsequent degeneration; (2), placental changes; (3), arrested secretion of the *liquor amnii*.

These three results will be dealt with separately.

The Fœtus.

All the experiments resulted in the death of the fœtus in the punctured sac; further, death occurred almost immediately after the aspiration of the fluid, for the development of the dead fœtus as studied macroscopically and microscopically after the death of the mother, corresponded to that of the one in the normal

sac excised at operation. This excision of the normal sac gave an exact method of verifying the time at which fœtal death occurred.

Cause of Fœtal Death.—Since death occurred in all the cases, it follows that the cause cannot be the mere absence of the *liquor amnii*, for, as mentioned above, in three cases this was not interfered with. Great care was in all cases exercised to avoid direct injury to the fœtus by the needle, and I am convinced that in no instance was any such injury inflicted, for, had the fœtus been punctured, the fact would have been easily recognised at the time or at the subsequent post-mortem examination. In no case was this so.

In the cases in which the amniotic fluid was withdrawn there is no direct evidence as to the cause of fœtal death. As will be indicated later, it is quite clear, from a study of the placenta, that the death of the fœtus was not due to placental degeneration. It is rather to be looked for in the arrest of the circulation consequent upon the general alteration of pressure within the sac, following on aspiration of the fluid. In one of the cases in which a sac was excised ten minutes after aspiration, it was noted that the uterine wall had contracted so as to follow up the collapsed amniotic sac, and that this contraction had resulted in the compression of the placenta from side to side, so that the ectodermic columns were closely compressed, and that in consequence many of the fœtal vessels in the mesoderm had their walls approximated and were partly emptied of blood. This compression of the placenta was a constant feature in all the punctured sacs; the compression and partial obliteration of fœtal vessels in the mesoderm (Figs. 2*c*, 7, and 8) were also constant. In none of the cases was it evident that a complete arrest of the fœtal circulation in the placenta had been thus effected, but in all there was marked evidence that the yolk sac circulation which in the rabbit persists up to the end of gestation, had been interfered with. Robinson (4) has shown that in rats and mice the yolk sac is

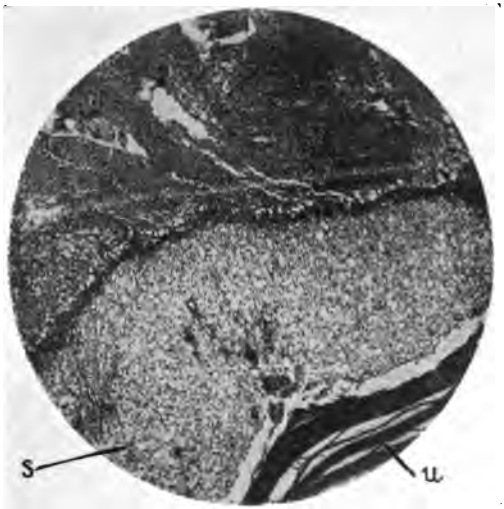


Fig. 5.

Fig. 6.

[*Face page* 80.

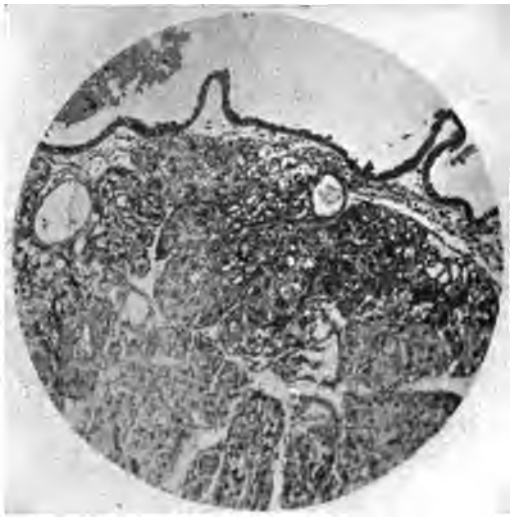


Fig. 7.

Fig. 8.

[*Face page* 80.

an important nutritive organ which fulfils its functions up to the end of gestation. Although the arrangement of the yolk sac in the rabbit almost certainly points to its taking a smaller share in the nutrition of the embryo than does that of the rat and mouse, still the circulation in it must be of some nutritive or respiratory importance, and any interference with it, such as resulted from these experiments, must affect the vitality of the fœtus. The arrest of the vitelline circulation consequent upon collapse of the yolk sac wall was, then, probably one of the causes of fœtal death, the other being the retarded circulation in the fœtal part of the placenta. This explains why death of the fœtus occurred both after withdrawal of the yolk sac fluid and of the *liquor amnii*.

The mere absence of *liquor amnii* may have played a part in the latter cases, but on this point I have no direct evidence to adduce, either for or against. That the *liquor amnii* is not in all cases necessary for the life of the fœtus, is shown by cases of extra-membranous development of the human embryo, several of which have been recorded. In these cases the amniotic sac is represented by a small pouch situated on the surface of the placenta close to the insertion of the cord, while the fœtus lies outside it but may still be alive at or shortly before the time of birth.

The changes which the dead fœtus undergoes were very characteristic. The normal pink translucent appearance of the living fœtus gives place to the dull grey aspect of the degenerated one, while the rounded contour is lost, the dead fœtus becoming flattened out between the face of the placenta and the upper wall of the sac. In its flattened appearance it closely resembles the *fœtus papyraceus* of occasional occurrence in the human subject (Figs. 2 and 3). In this connection it is interesting to note that no case of *fœtus compressus* is known in the human subject apart from twin pregnancy, where the pressure of one fœtus flattens the other. The flattening of the fœtus in these experi-

ments has, on the other hand, been due to the pressure of the uterine wall itself against the face of the placenta.

The exact significance of the pathological appearances of the *fœtus compressus* is a disputed one. Ahlfeld and Schatz (5) hold that the flattening is essentially a teratological condition. The latter, from a study of seven cases, comes to the conclusion that as a result of the imperfect blood supply of one of the fœtuses in some cases of uniovular twins, the nutrition of that twin suffers and there is oligohydramnios. This together with the thinness of the fœtus allows of the latter being readily compressed.

Ballantyne (6) on the other hand, regards the flattening as a secondary occurrence following the death of the fœtus from such causes as insufficient circulation in the common placenta or from placental hæmorrhage, and subsequent absorption of the *liquor amnii*. The results of these experiments entirely bear out this latter view, viz., that the first thing to occur is the death of the fœtus, and that after softening and degeneration have begun it becomes flattened out. That is what one would naturally expect, for the natural resilience and elasticity of the living tissues are sufficient to prevent any marked deformity, which on the other hand is readily produced when these are lost, as the result of death and degenerative changes.

In none of the cases was there any swelling of the tissues or accumulation of sanguinolent fluid in the abdomen, such as is met with when macerated fœtuses are retained in the human uterus, bathed in *liquor amnii*. Hourlier (7) who has examined a number of such cases, explains the accumulation of fluid as resulting from breaking-down of blood-clot which has formed in the pleural and peritoneal cavities as a result of the death of the fœtus from asphyxia. There have been no such hæmorrhages in any of my cases.

By microscopic examination a progressive series of degenerative changes can be traced in the various tissues and organs as

the time of retention of the dead fœtuses *in utero* lengthens. The changes begin early in all the tissues, but the rate at which they advance varies considerably in the different organs and histological elements.

By the third day the surface epithelium is entirely lost. The protoplasm of the epithelial cells swells up and becomes degenerated at the margins, while the nuclei become granular. In this way the attachment to subjacent structures is loosened, and large areas become detached and thrown off. The connective tissue cells are early affected. They undergo a process of granulation and breaking down, while the nuclei become first swollen and then granular, and finally disappear. The liver and heart are the organs which undergo most rapid degeneration and disintegration. The kidney and pancreas, on the other hand, break down more slowly. The nature of the change is the same in all cases, namely, a swelling of the cell protoplasm and a granular degeneration of the nucleus. The connective tissue cells resist longer than the special histological elements of the various organs. The cells of the pancreatic glands resist the process of disintegration longer than any others.

Pathology of the Retained Placenta.

The rabbit's placenta is easily differentiated into its two parts, fœtal and maternal. The latter is formed by the subcutaneous tissue of the two placental folds of the mucosa, and is therefore a bilobed organ. The connective tissue cells proliferate, and those round the blood-vessels become transformed into large decidual cells, which are at first uninucleated. The capillaries enlarge into blood sinuses with a swollen endothelial lining. Towards the later stages there is a leakage from the blood sinuses, so that fibrin is deposited round their walls and extends out among the decidual cells. These cells at the same time become polynuclear, and towards the end of gestation undergo a process of degeneration. In a zone of the placenta next

the uterine attachment the decidual cells remain uninucleated throughout, and the sinuses are always small, with no fibrin deposit round them. At about the mid term of pregnancy this zone is clearly differentiated from the rest of the maternal placenta. From this time onwards the uninucleated decidual cells begin to shrink, and the tissue becomes more and more attenuated. This zone is known as the "zone of separation," as it is through it that the placenta becomes detached at parturition.

The fœtal part of the placenta consists in the early stages of solid columns of ectoderm, which extend along the fibrin-lined maternal sinuses, replacing the endothelium. Into these solid columns of ectoderm the mesoderm extends, carrying with it the fœtal vessels and dividing the columns up into finer and finer tubules. This subdivision of the ectoderm goes on till about the twenty-sixth day, by which time the placenta is fully elaborated, and all that separates the fœtal from the maternal blood are a thin layer of ectoderm (which has now lost its cellular character and become plasmodial), and the fœtal capillary wall.

The changes which the placenta undergoes while retained *in utero* after the death of the fœtus, will now be detailed.

The only changes observed in a sac excised ten minutes after aspiration of the fluid were compression of the two lobes of the placenta from side to side, and the pressing together of the columns of ectoderm in the fœtal placenta, so that the mesoderm with its contained vessels was compressed. This resulted from the contraction of the muscular wall of the sac.

After an interval of three days, the walls of the punctured sac are further thickened and the placenta is more compressed, so that the fœtal part is distinctly less vascular in appearance than normal. At the same time there is a slight deposit of coagulated lymph in the mesoderm at the surface, and in the substance of the fœtal placenta. In one or two isolated areas

the ectoderm shows signs of commencing degeneration, as evidenced by the deficient nuclear staining, but it stills retains its power of penetrating the maternal tissues. The maternal placenta differs from normal only in the greater amount of fibrinous deposit among the decidual cells, and the more distinct differentiation of the zone of separation, due mainly to this, but partly to the greater attenuation of the tissue itself. The placenta as a whole, therefore, three days after the death of the fœtus, shows only slight departures from normal. It has gone on developing along the normal lines, and in the case of the maternal part shows an accelerated development by the more extensive fibrinous deposit and more marked zone of separation, so that it has the appearances of a twenty-first or twenty-second day placenta instead of a nineteenth day one, the time at which the animal was killed.

After a five days' interval, changes of the same kind are observed in the maternal placenta. There is more fibrinous deposit, and there is a more marked zone of separation, as compared with the normal, than is present after a three days' interval, while many of the vessels are fibrosed. As the area of fibrin deposit has increased, the decidual cells have changed from uninucleated into multinucleated, and some of the latter have degenerated, just as happens in the normal placenta. The fœtal placenta, however, now shows signs of degeneration. The mesoderm is extensively invaded by fibrin threads, which in places form laminæ. The ectoderm in the centre is markedly degenerated, nuclear staining being lost and the protoplasmic staining irregular. Although at the maternal surface the degeneration is less marked, the power of penetrating the maternal tissues is lost.

As the interval that elapses between the death of the fœtus and that of the mother lengthens from five to seven, nine, ten, twelve, and fourteen days, as in the remaining experiments, a progressive series of changes can be traced along these lines.

The fibrinous deposit in the maternal placenta becomes more extensive, and the fibrin laminæ become denser, so that the decidual cells degenerate and disappear. The fibrin laminæ round the vessels become thickened, so that many of the latter are blocked, while the tissue forming the zone of separation becomes more attenuated as contrasted with the normal. The fibrinous deposit in the fœtal mesoderm becomes more marked, and after an interval of nine days begins to invade the ectoderm, breaking it up and compressing it. The ectoderm undergoes a progressive degeneration, and ultimately almost completely disappears among the mass of fibrin which, after an interval of fourteen days, comes to make up the great part of the fœtal placenta.

It is thus evident that the changes in the placenta following on the death of the fœtus are of an entirely different nature in the two component parts—fœtal and maternal. The latter goes on developing along the normal lines, and all the departures from normal are merely of degree and are an expression of accelerated development. The fœtal placenta, on the other hand, undergoes processes which never occur in the normal sac, such as the deposit in the mesoderm of fibrin and coagulated lymph, and the degeneration of the ectoderm.

The fibrinous deposit which occurs in the maternal placenta takes place in the same situations as in the normal sac, and there is no evidence to show that its mode of production differs in any way from normal, *i.e.*, by a slow leakage through the fibrin-lined walls of the maternal sinuses. The only difference is that it occurs more quickly and more extensively, and that this results in the more rapid transference of the uninucleated into polynucleated decidual cells, and the more rapid degeneration of the latter; so that a placenta which is at, say, the twentieth day presents appearances like those met with at the twenty-second or twenty-third day. At the same time the

placenta increases in bulk in those cases where the operation has been done during the growing period.

This behaviour of the maternal placenta throws considerable light on the rarity with which abortion was induced during the course of the investigation. It is a remarkable fact that such interference as the uterus was subjected to in every case—the manipulation, the aspiration of fluid from the sacs, and the complete excision of part of the cornu—resulted in abortion in only one instance, and in that case the animal was at the twenty-eighth day. That abortion is prevented by the presence of other sacs on the proximal side of the punctured one, is negatived by the fact that when there is only one sac in the horn, and that is punctured, as in one of the experiments, it did not occur (Fig. 1).

From the structure and mode of development of the maternal placenta, we should not expect it to be easily cast off in the early stages before the zone of separation has formed, as it is practically one with the rest of the cornu, with a broad base of attachment. The subsequent changes which it undergoes are for the purpose, firstly, of allowing a sufficient blood supply into which the fœtal structures may dip, and providing a tissue, fibrin, through which they can readily penetrate, and secondly, of providing a zone through which the whole may be cast off with a minimum loss of blood and destruction of tissue.

The latter phase of development has been accelerated in the placenta of all the punctured sacs, for in all of them there has been noted a development of the zone of separation, and an attenuation of its cellular elements in advance of the normal, at the period examined. This I take to indicate a tendency to the earlier casting off of the dead ovum, and in one of the experiments this actually occurred, the whole ovum and maternal placenta lying free in the uterine cornu, the latter having been detached through the zone of separation at the

twenty-eighth day, while the normal placentæ were quite firmly attached, and presumably would have remained so for two days longer, when full-time would have been reached.

It is well known that it is often extremely difficult to induce abortion in the human subject provided the ovum be healthy, and that in many cases nothing short of manual separation will serve. This is due to the close incorporation of fœtal and maternal structures, and to the fact that the "zone of separation," which in the human placenta may be regarded as the spongy layer of the decidua, has not sufficiently developed. In the rabbit's placenta we see the development of this zone much more clearly and definitely than in the human subject, and its accelerated development in cases where the fœtus is dead is very instructive, as showing that while there is a tendency to abortion, this cannot take place until a certain definite series of changes has occurred. What it is that determines the formation of the zone of separation in the placenta is not known, but these experiments show that it cannot be dependent in any way upon the vitality of the fœtus belonging to it. Indeed, one of the most remarkable results of these experiments has been the demonstration of how little the development of the maternal placenta is so dependent.

I would here, then, emphasise this fact, that the dead ovum and placenta are not cast off till certain definite developmental changes have been gone through, these changes being in every respect analogous to those which determine the separation of the normal placenta.

Fig. 2 shows the zone of separation as seen by naked eye, and brings out the contrast between the normal and the punctured sacs, while Figs. 4 and 5 show the microscopic appearances.

What the changes in the placenta would be, when the initial cause of its degeneration resided not in the fœtal but in the maternal structures, I have not determined. It is

conceivable that a large hæmorrhage, occurring for instance close to the line of attachment to the uterine wall, would so tear up the tissues as completely to detach the placenta before the zone of separation had developed. Abortion in the human subject is sometimes due to such a cause, the ovum being at once expelled in a perfectly fresh condition, and with a fœtus which has the appearances proper to the period of pregnancy at which the abortion occurs.

On the other hand, it is common to find on examining an abortion sac that the placenta and decidua present appearances which differ little from normal, while the fœtus is in an advanced state of softening and disintegration, and has evidently been dead for some time. It has accordingly been inferred that such cases of abortion are due primarily to the death of the fœtus, and that the placenta has to a certain extent retained its vitality.

Referring to this subject, Ballantyne (6), in his *Antenatal Pathology*, says:—"It is possible that there may be a greater independence between the vitality of the fœtus and that of its annexa than has hitherto been supposed, and that when the cause of fœtal death resides in the fœtus itself the life of the placenta may, to a certain extent, be continued. When, on the other hand, the fœtus dies because the placenta is practically dead, the dependence will be more manifest." These experiments, I think, bear out this opinion; for although no perfect analogy can be drawn between the placenta of the rabbit and that of the human subject, yet the broad general lines of their structure and development are essentially the same, and the degree of dependence of the fœtal on the maternal structures, and *vice versa*, must be identical, so that we are justified in regarding the sequence of events as they occur in the rabbit's placenta, following on the death of the fœtus, to be the same as those which occur in the human placenta under similar circumstances. This point of difference must, however, always be kept in mind

in interpreting the pathology of the human placenta in the light of that of the rabbit, viz., that in the rabbit the placenta of the dead fœtus shares in the augmented blood supply which the presence of the other sacs in the horn determines.

While the maternal part of the placenta thus maintains its vitality, it is otherwise with the fœtal portion, as the changes which it undergoes are mostly an expression of the death of the tissue. This death does not occur for a few days after the death of the fœtus, as after an interval of three days the ectoderm still retains its power of penetrating the maternal placenta. The first pathological change observed is a deposit of coagulated lymph in the mesoderm at the surface. This is the result of a slow leakage from the fœtal vessels. As the interval between the operation and the death of the mother lengthens, this fibrinous deposit in the mesoderm becomes denser and extends throughout the substance of the placenta, while the cellular elements degenerate.

The changes which the ectoderm undergoes are very characteristic. They are of slower occurrence than those in the mesoderm, as, after an interval of three days, as already mentioned, it still retains its vitality where it is in contact with the maternal tissues. It must be from them that it derives its nourishment, as all circulation in the fœtal mesoderm must cease after the death of the fœtus. After a five days' interval degeneration is present, as evidenced by the granular cell protoplasm and faint or entirely absent nuclear staining.

The degeneration is most marked in the central areas, and least so at the maternal junction, where many of the cells are in actual contact with maternal blood.

At intervals of seven, nine, and ten days the degenerative changes progressively increase, so that the original structure of the fœtal placenta becomes gradually lost, the division into columns is no longer recognisable, and it assumes a dense solid

structure, in which no cell outlines can be distinguished. After twelve and fourteen days the fibrinous deposit everywhere invades the ectoderm, so that the latter can only be recognised in patches (Figs. 6, 7, and 8).

It would thus appear that the ectoderm has very little power of independent growth in the rabbit's placenta during the middle and later stages of gestation, but that it is dependent for its vitality on the fœtal blood carried by the vessels in the mesoderm. In none of the cases has there been detected any tendency to proliferation of the ectoderm such as occurs in hydatidiform mole and *deciduoma malignum* in the human subject. Eden (8) in a number of retained human placentæ which he examined, did not once see any proliferation of the epithelium of the villi, all of which bears out the contention that there must be something in addition to the death of the fœtus which determines the development of these conditions. Haultain (9) from the study of a case of *deciduoma malignum*, concludes that the epithelium of the villi continues to proliferate and penetrate the maternal tissues only so long as it is in contact with circulating blood, and that when coagulation and extravasation occur it rapidly degenerates. The fibrin deposit in the maternal placenta in those cases cannot, however, be regarded as contributing to the death of the ectoderm, as, in the rabbit's placenta, it is the fibrinous deposit round the maternal sinuses which allows the penetration of the ectoderm, and in the punctured sacs there was evidence that the circulation in the maternal sinuses was going on.

The changes which Eden has described in the retained human placenta correspond very closely to those which I have found in the rabbit. He concludes that after the death of the fœtus the maternal circulation in the intervillous spaces continues actively for some time, but that gradually it becomes slowed in certain areas. The consequence is that the blood

coagulates, and fibrin is deposited round the villi. This is a process which occurs normally in the human placenta, resulting in the formation of white infarcts. In the placenta of a dead fœtus this process goes very much further, so that the normal spongy consistency is lost, and the placenta becomes extensively consolidated. The fibrinous deposit extends into the compact layer of the decidua, but the spongy layer (which may be regarded as analogous to the zone of separation in the rabbit's placenta) is never so invaded, but remains loose and easily separable. Fothergill (10) has described the first stages of connective tissue formation in the fibrin deposit, but Eden holds that there is no such process, and in none of my cases in the rabbit has there been any. The villi ultimately lose their epithelial covering, so that the great majority are only recognisable by their outlines, but, in the spongy part of the placenta, apparently healthy villi can be recognised for a long time.

While, in the case of the human placenta, it can only be an inference that all changes found in it occur after fœtal death, I have been able to prove definitely in my experiments that the changes described do so occur.

With regard to the *liquor amnii*, all that my observations definitely prove is that its secretion ceases with the death of the fœtus, and this in spite of the fact that the maternal part of the placenta shows very little departure from normal for the first few days after the withdrawal of the fluid. These facts point towards the conclusion that in the rabbit the amniotic fluid is fœtal in origin.

Conclusions.

1. As a result of the withdrawal of the yolk sac fluid and the *liquor amnii* the fœtus at once dies, death being due to the arrest of the vitelline and allantoic circulations.

2. The dead fœtus and its placenta are retained *in utero*,

and the former undergoes degenerative processes and becomes flattened out.

3. The changes which occur in the two parts of the retained placenta—maternal and fœtal—are different in nature.

4. The fœtal part slowly degenerates, the mesoderm becoming invaded by fibrin and the cells of the ectoderm undergoing a granular disintegration.

5. There is no tendency to proliferation of the ectoderm after fœtal death.

6. The changes which the maternal placenta undergoes do not differ in their essential nature from those that occur during its normal development.

7. The placenta becomes detached only when the tissue forming the zone of separation has become sufficiently attenuated, and it does so in the same manner as the normal placenta.

8. The secretion of the *liquor amnii* ceases on the death of the fœtus.

In conclusion, I take this opportunity of expressing my best thanks to Dr A. H. F. Barbour and Dr D. Noël Paton for much encouragement and help during the course of the investigation.

Description of Plates.

Fig. 1.

Entire uterus removed *post-mortem*.

Operation performed when animal was fourteen days pregnant. Interval between operation and death of animal, seven days.

Note the contrast between the normal (*n*) and the punctured sacs (*p*). *S* is the site from which the sac was excised at operation.

Fig. 2.

Transverse sections of sacs of uterus shown in Fig. 1.

Operation at fourteenth day. Animal killed on twenty-first day. *A*, normal sac excised at operation. *B*, normal sac removed *post-mortem*. *C*, aspirated sac removed *post-mortem*.

Note that the wall of the punctured sac is thickened and the

placenta compressed laterally, while the fœtus (*f*) is flattened out. The amniotic sac is obliterated. Note also the well-marked zone of separation (*s*) in the aspirated sac.

FIG. 3.

Showing two sacs with roofs dissected off.

Operation at sixteenth day. Animal killed on the nineteenth day. *A*, normal sac removed *post-mortem*, nineteenth day, showing relation of fœtus in its membranes. *B*, aspirated sac. Note absence of *liquor amnii*, and dead fœtus flattened out on surface of placenta. *C*, fœtus from a normal nineteenth day sac. *D*, fœtus from a punctured sac. It shows the development of a sixteenth day fœtus, and must therefore have died immediately after operation.

FIG. 4.

Part of maternal placenta from a normal sixteenth day sac. (×50.)

Note that no zone of separation is yet differentiated.

FIG. 5.

Part of maternal placenta from an aspirated sac. (×50.)

Operation at fifteenth day; animal killed at twenty-seventh day.

Note the zone of separation (*s*) clearly differentiated from the rest of the placenta, which is extensively invaded by fibrin. *U*, uterine wall.

FIG. 6.

Normal fœtal placenta at sixteenth day. (×50.)

The ectoderm is divided into columns by the mesoderm carrying the fœtal vessels. There is no fibrous deposit.

FIG. 7.

Fœtal placenta from sac aspirated on the fourteenth day, and removed *post-mortem* five days later. (×50.) The ectodermic columns are compressed and the walls degenerated. There is a fibrinous deposit in the mesoderm.

FIG. 8.

Fœtal placenta from sac aspirated on the fourteenth day, and removed *post-mortem* seven days later. (×50.) The division into columns is not recognisable, and the ectoderm is degenerated, so that cell outlines cannot be recognised. There is an extensive invasion by fibrin.

LITERATURE.

1. MINOT.—"Uterus and Embryo: (1) Rabbit," *Journ. of Morphology*, 1889.
2. DUVAL.—"La Placenta des Rongeurs—Le Placenta du Lapin," *Journ. de l'Anat. et de la Physiologie*, 1889-90.
3. CHIPMAN.—"Observations on the Placenta of the Rabbit," *Laboratory Reports of the Royal College of Physicians*, Edinburgh, vol. viii.
4. ROBINSON.—"The Nutritive Importance of the Yolk Sac," *Journ. of Anat. and Physiol.*, 1892.
5. SCHATZ.—"Die Gefassverhandlungen des Placentakreisläufe einiger Zwillinge ihre Entwickelung und ihre Folgen." *Archiv für Gynäkol.*, 1887.
6. BALLANTYNE.—"*Antenatal Pathology and Hygiene*": *The Fœtus*, Edinburgh, 1902; "*Antenatal Pathology and Hygiene*": *The Embryo*, Edinburgh, 1904.
7. HOURLIER.—"De la Mort du Fœtus pendent les derniers Mois de la Grossesse avant le Travail," Thèse, Paris, 1880.
8. EDEN.—"On the Structure of the Ripe Placenta and the Changes which occur in Placentæ retained *in Utero* after the Death of the Fœtus," *London Obstet. Transactions*, 1896.
9. HAULTAIN.—"Deciduoma Malignum," *British Gynæcol. Journ.*, 1889, 1900.
10. FOTHERGILL.—"Placental Tissue, fresh and old," *British Med. Journ.*, 1896, vol. i.

Professor Simpson said he had read most of Dr Watson's paper when sent in as a graduation thesis. It was awarded a gold medal. The paper was a credit to the author and the School, and was a valuable contribution to the *Transactions* of the Society. It was a helpful contribution following upon Dr

Barbour's paper dealing with an excess of *liquor amnii* in cases of exomphalos. Dr Watson showed that when the *liquor amnii* was withdrawn, the fœtus died, and there was no further reproduction of *liquor amnii*, although the maternal placenta continued to live on. So he infers that its origin is fœtal. He has shown that the circulation stopped in the fœtal part of the placenta, but continued in the maternal. That brought them to the suggestion that the *liquor amnii* was a renal secretion. It was repugnant to think that the fœtus was bathed in its own urine, and occasionally swallowed it. Although it may be fœtal in origin, it may not be from the kidneys alone. Dr Watson's observations were important in revealing the development of the line of separation of the placenta. When death of the fœtus occurs *in utero*, they did not get expulsion at once, but only after vital changes had taken place in the membranes, especially the decidua. Dr Watson has demonstrated the changes taking place in the membranes of the rabbit's uterus corresponding to those in the human female. He considered the paper an interesting and valuable one.

Dr Berry Hart said the communication was of great value, and the author deserved the greatest credit for it. The interesting point was the formation of the separation zone in the placenta. He (Dr Watson) thought that the placenta might grow after the fœtus died. That was not held as yet with regard to pregnancies in the human female, though held as regards extra-uterine pregnancy. In such a case he (Dr Hart) had shown that the placenta was increased in size and thickness, owing to deposit of blood-clot. It was questionable whether increased growth would occur with normal pregnancy. Dr Watson's observations showed that the fœtus had an influence on the formation of the *liquor amnii*. He congratulated Dr Watson on the success of the paper.

Dr Barbour thought this the most important scientific paper which had been read before the Society for some years. Since

Dr Chipman's thesis on the rabbit's placenta, the work for which was also done in the Laboratory of the Royal College of Physicians, no piece of work of this kind had been produced in Edinburgh. The Society was fortunate in having the results of Dr Watson's research laid before it, because it was original work of this kind which gained for the Edinburgh School recognition abroad. Though his paper was read in half an hour, it gave the results of nearly a year's laboratory work. Many papers were based on the description of one preparation, or it may be several, that had come fortuitously into the hands of the investigator; but here we had a piece of work which had been deliberately thought out beforehand, the difficulties which arose in the course of inquiry successfully met, and the results not accidental, but what the investigator wanted to know. To work of this kind alone was the term *research* applicable. And while the results at first did not seem adequate to the amount of labour involved, they had the peculiar value of being facts, not opinions. The new facts were that the removal of the *liquor amnii* caused the death of the fœtus, that the maternal placenta continued developing, and that abortion did not follow. It was probable that the continuance of gestation in the adjoining sacs prevented retrogressive changes in the punctured one with the dead fœtus. There was an analogous condition in the human female when the continued development of one twin led to the dead twin being retained to the end of pregnancy. It would be interesting to know what would happen in the case of the rabbit were all the sacs punctured. The occurrence of accidental hæmorrhage some time after the death of the fœtus, as in the case of exomphalos which he had just laid before the Society, showed that the circulation was still active in the maternal part of the human placenta in certain cases.

Dr Haultain stated that Dr Watson's paper brought out one or two points of practical importance. The first was, that after abstraction of the *liquor amnii* abortion did not follow.

That was interesting, and militated against the method of inducing artificial labour by puncturing the membranes. He (Dr Haultain) had seen a case where after puncture of the membranes no pains came on for a month. Secondly, there was the relation of the so-called carneous mole to missed abortion. From Dr Watson's observations it would appear that missed abortion occurred from death of the fœtus, perhaps from loss of *liquor amnii*, and death of the fœtal placenta and decidua; while in carneous mole they had simple death from escape of the *liquor amnii*, the fœtal part of the placenta died but the maternal part remained vascular. Thirdly, the maternal placenta seemed to grow after the fœtus died. He had seen a fœtus of two months with a thickened decidua representing a placenta of four or five months' gestation. Such cases appeared to accord with Dr Watson's observations. The paper was very interesting, and he begged to thank Dr Watson for it.

Dr Fordyce congratulated Dr Watson on his paper. With regard to Dr Haultain's case, where after rupture of the membranes labour was delayed for a month, did the *liquor amnii* continue to discharge? In a similar case of his own there was a free discharge for three weeks that he took to be freshly secreted *liquor amnii*. He had seen a case where, after severe flooding, an ovum was expelled with a large placenta, having practically no naked-eye degenerative changes, and with a shrivelled fœtus and the *liquor amnii* absorbed. The hæmorrhage was due to separation of the placenta. He had listened with great interest to the paper.

The President (Dr J. W. Ballantyne) thanked Dr Barbour and Dr Watson in the name of the Society for their communications. Dr Watson's paper was one of special value, as it represented facts. They must remember, however, they were facts about the rabbit. That had always been his (Dr Ballantyne's) difficulty in his work on *Antenatal Pathology*,

with regard to utilising observations of facts in the lower animals. In the rabbit, as Dr Watson said, the amniotic sac closed at the tenth day, and as the gestation continued for thirty days, one-third of the life of the rabbit *in utero* was passed before the amnion closed. Now in the human subject the amnion was closed, in the earliest known specimen, that is, at the fifth day. That was the weak side of research work, and they must beware of drawing conclusions from the rabbit and applying them to the human subject. As regards the formation of *liquor amnii*, cases had been observed of rupture of the amnion early in gestation, and in them a resecretion of the fluid had occurred, and a scar had been observed in the amnion due to healing of the tear: that might easily be done experimentally. A similar experiment had been done in the case of the hen's egg. Then in the human subject it is known that all specimens of *liquor amnii* were not exactly the same. The fluid in hydramnios caused great irritation to the peritoneal and pleural surfaces when injected into the corresponding cavities. Ordinary *liquor amnii* had no such effect. There was another point for which he (Dr Ballantyne) was responsible. A fœtus with placenta attached was examined by him some years ago. It was born at the seventh month, and had been dead a fortnight. The skin was peeling, and fœtal peritonitis was present. Fluid was also present in the pleura. On microscopic examination the blood in the placental vessels was absolutely fresh. That blood was present in the vessels of the chorionic villi, and was recent blood, though the fœtus had been dead a fortnight. The maternal part of the placenta had perhaps gone on growing, and the fœtal portion had been kept alive by it; that was an important observation, and it was difficult to explain it satisfactorily. With regard to Dr Barbour's question, referring to the presence of hæmorrhage in the placenta of the case of exomphalos, in the sixteen cases of exomphalos described by

the President in his book, there was hæmorrhage in many of them, and this was generally regarded as due to shortness of the umbilical cord: that might also explain the hæmorrhage in Dr Barbour's case.

Dr Watson thanked the Society very much for the extremely kind way in which they had received his paper, and he also thanked the Fellows for the criticisms passed on it. With regard to Dr Ballantyne's observation of normal blood in the dead fœtus, in all his (Dr Watson's) specimens the fœtal blood degenerated very early, usually within three days. He could add nothing further to elucidate the origin of the *liquor amnii*. With regard to the continued growth and development of the placenta, this was quite distinct in his cases. The maternal part developed just as in the normal placenta. It would be interesting, as Dr Barbour suggested, to puncture all the gestation sacs and note the effect.

EDIN. NOV 17 1905 LIBRARY

EXTRAORDINARY MEETING.—NOVEMBER 22, 1905.

Dr J. W. BALLANTYNE, *President, in the Chair.*

WHAT POSITION SHOULD CLINICAL GYNÆCOLOGY HOLD IN THE MEDICAL CURRICULUM?

By F. W. N. HAULTAIN, M.D., F.R.C.P. (Edin.); Physician, Royal Maternity Hospital, Edinburgh; Lecturer on Obstetrics, Edinburgh School of Medicine.

MR PRESIDENT AND GENTLEMEN,—We are met to-night to discuss a subject which to us must be of great importance. As is well known, within very recent date an event of great moment has taken place—Obstetrics in Edinburgh University has been delivered, and given birth to Gynæcology. Whether

the infant be premature or "full-time," is now of secondary importance; the child is born, and it behoves us as far as possible to see that it be carefully nurtured. It has been whispered that perhaps we are exceeding our office in concerning ourselves in the matter, but it appears to me that our Society is surely well within its rights in giving an expression of opinion as to the position the junior branch of gynæcology should hold in the medical curriculum; when we remember that in our ranks are numbered not only the pioneer of scientific gynæcology—Sir J. Y. Simpson—but also Thomas Keith and Lawson Tait, who have perhaps done more than any others to develop and place it on its present surgical basis. Further, among our present Fellows are all those immediately concerned in its teaching, who, I cannot help thinking, will only too gladly welcome a discussion on its various aspects, which a Society such as ours is able to provide. On these grounds I therefore presumed to suggest at our last meeting the desirability of considering the subject, and hence our meeting to-night.

The main lines upon which the discussion should run appear to me to be twofold:—

(1) The comparative importance of gynæcology in general practice.

(2) The facilities afforded for its teaching in our School; or, in other words—Can and should gynæcology be legitimately made a compulsory subject?

Under the first heading the opinion of our Fellows who are in general practice is of prime importance, and I trust they will not hesitate to express themselves freely on the point; while the solution of the second must rest almost entirely with those intimately connected with its teaching.

Generally speaking, there is no gainsaying the fact that it is desirable that so far as possible the student should be trained in all branches of medical science; but the time at his disposal

is limited, and judicious pruning is necessary. That the knowledge of gynæcology is important cannot be denied, but one must remember that there are other as important subjects, if not more so indeed, to be considered. One might here cite diseases of children, which may reasonably be said to form two-thirds of general practice.

Within recent times gynæcology, both theoretical and clinical, has been compulsory in our University curriculum; the theoretical portion has formed a part of the midwifery course and examination, while the clinical portion has formed an integral part of the clinical medicine course and examination—in this latter, one in each six students is allotted a gynæcological case for diagnosis and treatment instead of a medical case. Thus it becomes a necessity for every student to acquire such an intimate knowledge of diseases of women that he shall be able to recognise and treat any given case in this subject, and by that means pass an examination of a standard worthy of our University. One can at once see that to do himself justice the student must of necessity have a very thorough training in this subject of his examination. Indeed, he should have the same thorough knowledge in gynæcology as in clinical medicine, upon which it is put on a par, else he must fail, or clinical gynæcology must be reckoned a back door for passing the clinical medicine examination.

The critical question necessarily arises—Is the time and clinical material at his disposal sufficient to afford this adequate instruction? In the class of clinical medicine, generally speaking, it may be said there are about 200 students; the clientele at their disposal being the occupants of twenty-seven beds, and out-patients. Under the present methods of teaching, the prescribed time at their disposal is limited to nine months, during which about forty gynæcological cliniques are able to be held. During each clinique not more than twelve students can be enabled personally to make the necessary examination. Thus

each student in his completed training will have the opportunity of examining less than three women under the personal supervision of his teacher. He is then expected to be sufficiently conversant to pass the necessary examination, which one cannot help thinking by comparison is unfair; and one cannot but pity the victim of the ballot who has to undergo this ordeal. It has been suggested, nay more, attempted, to deal with this apparent insufficiency by aid of limited cliniques held three times a week, at which say ten students only can attend. By this means, granted that each student makes an examination on each occasion, he will have the opportunity in the course of his training of making about four examinations, a better, but still absolutely inadequate number for what is expected of him.

It will be thus evident that the opportunities of our students of acquiring a sufficient knowledge of clinical gynæcology for what is required of them is impracticable, even though it be shown that the subject is worthy of forming a compulsory part of the medical curriculum.

From this standpoint, as I have already said, from a general point of view it is desirable that the student should have an intimate knowledge of every branch of his profession, but such a high ideal is untenable when the time at his disposal is considered. One must, therefore, make comparisons, and so far as possible give the more important subjects premier place.

Naturally, to the gynæcologist gynæcology is pre-eminent; but in a Society such as ours, where the general practitioner plays such an important *rôle*, we are able to consider the subject from a more impartial aspect. Gynæcology, though doubtless important, cannot for one moment be placed on an equal footing with diseases of children, in so far as the routine of general practice is concerned. Yet, even with the perfect clinical opportunities which are afforded him of acquiring an intimate knowledge of this latter subject, it still remains

optional. Why gynæcology, therefore, with its markedly inferior and altogether insufficient opportunity for learning, should form a compulsory subject is, to say the least of it, anomalous. Further, that it should form an essential part of clinical medicine is more than curious, as it undoubtedly is surgical in all its bearings. Such a condition of affairs can only be looked upon as a relic of bygone days, and is not in keeping with the necessary advance which should be apparent in a School such as ours.

From what has been said, a legitimate conclusion to be arrived at regarding the teaching of gynæcology would appear to be:—

1*st*. That theoretically it should still form a part of obstetric teaching, and from this aspect be necessarily compulsory.

2*nd*. From a clinical standpoint, it should be removed from forming a part of the clinical medicine course and examination, and from forming a compulsory subject of examination.

3*rd*. It should take its place as an optional subject alongside of diseases of children, dermatology and otology, and laryngology.

Though not making it compulsory, it would be well to allow the student generally to continue to have his present smattering of knowledge of the subject, by means of cliniques conducted on the present lines.

Doubtless, by its severance from clinical medicine he would be debarred from the so-called clinical lecture, which at the best in gynæcology is only a theoretical lecture glorified by the citation of a few illustrative cases, and therefore of little special importance.

In this way the general teaching would in no way interfere with a more complete course given as an optional subject, which could either be attended by the senior student with a bent in

this direction, or by graduates. By this means we would be able to train a certain number thoroughly in this important subject, instead of using all the material at our disposal in attempting to give a few superficial facts to all.

To hall-mark our graduates as gynæcologists with such inadequate clinical training, which we necessarily do by making it a compulsory subject, is surely unworthy of the high standard of our University.

It is surely better to turn out a limited number well-equipped, than an inefficiently tutored crowd, on a long-suffering public.

Facts must be looked in the face and dealt with accordingly, much as the general practitioner may feel the importance of gynæcology in his routine work, and it is he we have to consider mainly from a teaching point of view. The time at the disposal of the students and the clientele at the disposal of the teacher are such that, in a school of the dimensions of Edinburgh, it is burlesquing the subject to make clinical gynæcology a compulsory part of the medical curriculum.

Dr Haultain's communication was subsequently discussed in private by the Society.

MEETING II.—DECEMBER 16, 1905.

Dr J. W. BALLANTYNE, *President, in the Chair.*

I. *Dr N. T. Brewis* showed—(*a*) FIBROID TUMOUR removed during pregnancy by supravaginal hysterectomy. Patient, aged 35, had eight previous pregnancies; menorrhagia for ten months, and had never "got small" after last confinement, fourteen months previously. The tumour consisted of two parts—(1) the uterus, enlarged to the size of a four and a half months' pregnancy; (2) an irregularly shaped fibroid tumour, growing between the layers of the left broad ligament. The latter

pushed down the vaginal roof and elevated the uterus, so that on vaginal examination the external os was found above the pubes, and to the right. On opening the abdomen the uterine portion was recognised, but it was not until after the operation that the condition of pregnancy was diagnosed. The attachment of the tumour to the uterus was almost 1 in. in diameter, and on looking at the specimen it might be thought that the case was one for myomectomy. Had the pregnancy been discovered during the operation, the conservative method would certainly have been considered. There might, however, have been some difficulty in procuring proper hæmostasis, as the pedicle was situated where the vessels were large and abundant. (*b*) LARGE MULTILOBULAR FIBROID removed during pregnancy by supra-vaginal hysterectomy. Patient, aged 42, had had occasional abdominal pains for a year; noticed swelling four months ago, and had menorrhagia and metrorrhagia for six weeks. The abdominal swelling consisted of large nodular growths reaching from the symphysis to the ensiform cartilage. Vaginally, the cervix could not be reached, but a large nodule was felt in Douglas's pouch. The interest of the tumour lay in its peculiar shape. There was a large rounded central portion, composed of the body of the uterus and an interstitial fibroid with a diameter of 3 ins., growing in the posterior wall; also several subperitoneal fibroids, varying in size from that of a walnut to that of a fœtal head. The large central portion contained a fœtus, but this was not discovered until the day before the specimen was exhibited. (*c*) CERVICAL FIBROID removed by abdominal myomectomy. The patient, aged 30, had been pregnant three times, each labour having been terminated by craniotomy, on account of the tumour. The abdomen presented a hard swelling felt just above the brim of the pelvis. Vaginally, it was felt lying in front of and to the right of the uterus, the cervix being displaced upwards and backwards, and to the left. On opening the abdomen a tumour was found growing upwards and forwards

from the anterior aspect of the cervix. The peritoneum was stripped off and the adhesions divided, the tumour was then bisected and enucleated from the cervical canal, which was subsequently closed by stitching. There was considerable oozing from the broad ligament, but it was controlled by packing with gauze, an end of which was carried through the vaginal roof. The uterus and ovaries appeared healthy and were not removed. (*d*) LARGE CYST removed by ovariotomy during pregnancy. The patient had had six children and was four months pregnant. There was a history of pain and swelling of three months' duration. A large movable swelling was felt in the abdomen quite separate from the uterus. On opening the abdomen a cyst was found with a long and twisted pedicle, giving rise to the dark colour of the tumour. (*e*) OVARIAN TUMOUR WITH TWISTED PEDICLE. Ovariotomy was performed on patient, aged 18 years, and a cyst removed. The pedicle had several twists, and part of the tumour was quite black, as was also the tube on that side. (*f*) UTERUS removed by hysterectomy for cancer of the body. Cancerous infiltration of the endometrium was well seen. An interesting feature was the unusual softness of the uterus: during manipulation a portion of the anterior wall was torn away, and while the uterus was being pushed down it became completely invaginated. The tubes and ovaries were also removed. (*g*) CYST OF LEFT BROAD LIGAMENT removed for reflex pain in region of kidney. The swelling was dissected out with great difficulty owing to adhesions. The left ureter was separated from the internal iliac artery by the tumour. (*h*) FIBROID TUMOUR causing retention of urine, removed by supravaginal hysterectomy. Tumour was unsuspected by patient and medical attendant. It formed no abdominal swelling, but grew entirely in the pelvis, and gave rise to the difficulty with micturition.

II. *Dr Haig Ferguson* showed a SLOUGHING FIBROID TUMOUR,

the size of a fœtal head, removed from a patient of 50. She was in perfect health until a day or two before admission to hospital, when she felt something come down when she was at stool. On examination the mass looked like an inverted uterus. She was in extreme pain. Examination under chloroform showed the os to the left of the symphysis, and outside the pelvis. The uterus was 3 inches in length, and the tumour was a fibroid of the posterior lip of the cervix. It was gangrenous and fetid. The bladder, which was outside, was dissected off, and pushed up, and the tumour enucleated. It would have been unsafe, owing to the gangrenous condition, to do a vaginal hysterectomy, which would have been the easier operation. The case was interesting, from its rarity and the fact that the patient was quite well two or three days before admission. She made an uneventful recovery.

Last winter he showed a uterus which he had removed from a young patient for cervical cancer. She had returned with nervous phenomena, and Dr Bramwell considered these due to metastasis in the spinal cord. She died shortly afterwards, and sarcoma of the spinal cord was found post-mortem. There was no recurrence of malignant disease in the pelvis, and the combination of carcinoma of the cervix and sarcoma of the spinal cord in one individual was certainly an unusual one.

III. *Dr Lackie* showed a UTERUS removed by vaginal hysterectomy for hæmorrhage. Two years ago patient had severe pelvic pain, menorrhagia, and metrorrhagia. The ovaries were enlarged and cystic, and she had all the signs and symptoms of chronic ovaritis. He removed the ovaries and she improved for a time, but relapsed into her former condition. Two years after the operation she came back with the same symptoms, pain and profuse hæmorrhage, which reduced her very much. He removed the uterus by vaginal hysterectomy. She had now no pain or hæmorrhage, and was very well. The uterus was

examined at the laboratory and declared to be normal. There was no history of hæmophilia. There was no sclerosis of the uterine vessels.

IV. *The President* exhibited—(*a*) A PARTIALLY FLATTENED FŒTUS, not a twin. This specimen he had received from Dr James Smith, of Brunton Place. The mother had had three normal labours and no previous miscarriages. She last menstruated in May of this year, and the fœtus and annexa shown were expelled in the beginning of the present month (December). There was no known cause for the abortion. The fœtus had evidently been dead for about twelve weeks (judging from the size of it and from the clinical data). It was partially flattened, the compression being specially well marked where the right arm lay across the right side of the head. The fœtus measured about 4 inches in length; and corresponded in size, therefore, to the end of the third month. There was no twin fœtus to compress it, neither was there any tumour in the pelvis or uterus of the mother. (*b*) A COPY OF THE RARE WORK known as Raynalde's *Byrthe of Mankynde*. This was the first or second English work on midwifery; it was undoubtedly the first *illustrated* work. Little was known about the author, and there was even a question whether he was not also the printer of the volume. Part of it was a translation of Rhodion's *De Partu Hominis*. The edition which he showed was that of 1560. He also showed the edition of 1552, which was in the College of Physicians Library, and that of 1598, which Dr Underhill had kindly lent to him. He believed that the first edition, that of 1540, was dedicated to Henry VIII.'s Queen, Catherine Parr; but these other editions showed no dedications. They were fine specimens of black-letter. (*c*) A HYDROCEPHALIC FŒTUS delivered by spinal tapping, as was described in his communication. (*d*) A PLACENTA AND MEMBRANES, showing velamentous insertion of the vessels of the cord. The mem-

branes ruptured three weeks ago, and a large quantity of *liquor amnii* was lost daily. The cord prolapsed, as was easily to be understood when it was noted that the tear in the membranes was close to the velamentous insertion.

V. PUDENDAL MYXOMA.

By G. F. Barbour Simpson, M.D., F.R.C.P.E., F.R.C.S.E., Senior Assistant to the Professor of Midwifery, University of Edinburgh; Gynæcological Tutor to the University Class of Clinical Medicine, Royal Infirmary, Edinburgh, etc.

The vulva may at any time become the seat of some form of neoplasm, and while we not infrequently meet with such varieties as the caruncle at the orifice of urethra, various forms of specific swellings (warty or gummatous in nature), lipomata, fibromata, and carcinomata, it is rare to meet with a tumour in this situation of a purely myxomatous type. I desire, therefore, to place on record the following case.

The patient, a Jewess, age 16, came to see me in May, complaining of a growth in the privates accompanied by bleeding. Shortly before leaving school at the age of 13, she noticed a small swelling about the size of a plum at the vulva. At first sessile, it gave rise to inconvenience but no pain was experienced. The swelling gradually increased in size, and with this increase in size began to hang down and become pediculated. A year ago the patient began to experience difficulty in locomotion, owing to the growth coming in contact with the thighs. Latterly, as the surface of the tumour showed signs of excoriation, bleeding set in, not much at a time and usually at intervals of a week. Of late, owing to the hæmorrhage becoming more frequent and the general health beginning to be undermined, she was glad to seek medical aid. There is nothing of importance to note in the previous health, family, or social conditions of the patient. (Plates I. and II.)

Menstruation set in at 12½ years, regular in type and habit.

PLATE I.

[*Face page* 60.

PLATE II.

[*Face page* 60.

On examination of the external pudenda a tumour, 4 inches in length and greatest breadth 4 inches, was observed growing by a stalk, 1½ inches broad, from the right labium majus; it was uniform above and lobulated below, where it was also excoriated and slightly fungating. Marked pulsation was felt in the stalk of the tumour.

Treatment.—The pedicle was grasped near its base by means of clamped forceps, and divided. The larger vessels were ligatured with catgut, and the clamp forceps gradually slackened until all bleeding points were secured. The raw surfaces were then united by means of a continuous catgut suture, and a dressing of gauze applied externally. The catheter was passed for the first forty-eight hours after the operation, to prevent any contamination of the wound, and the patient was able to go about perfectly well three weeks later. I saw her again yesterday, and on examination found the scar perfectly healthy.

On macroscopic examination the whole of the external surface of the tumour is seen to be covered with skin epithelium, and has a distinctly lobulated appearance. The masses vary in size from about 2 cm. in diameter to small papillary outgrowths of about $\frac{1}{10}$ cm. (Plate II.)

The epithelium over the larger masses appears to be stretched, and through it one can see the swollen papillæ, which have the appearance of sago grains. The growth is firm and elastic to the touch, as if filled with firm gelatinous material, at other parts the surface shows typical papillary outgrowths with thickened epidermis. Section through the growth shows the tumour to be mostly composed of a clear gelatinous material, through which is seen running strands of well-formed fibrous tissue cutting up the jelly-like substance into various sized masses. This gelatinous material is more abundant at the centre of the growth, but is also seen in parts to have spread right out to the epithelium, distending that part and giving rise to the raised lobulated appearance of the surface. At some

parts the gelatinous material contains blood-vessels, at others it appears to be quite devoid of vessels.

Histologically, this gelatinous substance is seen to be myxomatous tissue, showing typical branching cells with their delicate processes ramifying amongst the mucoid substance, and in parts young embryonic blood-vessels are evident. Section through one of the larger masses at the surface of the growth shows many of the papillæ greatly distended and deformed, from marked changes in the stroma, which is undergoing both œdematous infiltration and myxomatous degeneration, causing stretching and atrophy of the surface epithelium. At various points the subcutaneous tissue shows fibrous overgrowth, with portions here and there of commencing myxomatous softening. Many of the arteries show thickening of their walls, and the veins are prominent and distended with blood. The lymphatics are numerous, the larger lymph channels containing granular material. Many mononucleated cells are seen lying throughout the subcutaneous tissue, but more especially in the perivascular lymphatics.

Transverse section through the stalk shows it to be composed of the normal elements and arrangement of the hypertrophied skin. In the centre of the stalk, and running through two-thirds of its length, is seen a mass of myxomatous tissue, sharply defined from the tissues in which it lies, and from which at one point in particular blood-vessels are to be seen passing from it into the myxomatous mass, and giving rise to new blood-vessels forming vascularised buds—apparently organisation of the foreign material.

Virchow distinguished different subdivisions of myxoma, viz., *myxoma gelatinosum*, which is largely supplied with homogeneous intercellular substance; *myxoma fibrosum*, with a great development of fibrillar intercellular substance; *myxoma medullare*, distinguished by the increase of its cellular elements and forming the transition to the corresponding cellular form

of tumour, the myxo-sarcoma; *myxoma teleangiectaticum*, furnished with numerous capillaries; *myxoma cavernosum*, containing many cavernous blood-vessels. Of these subdivisions, the foregoing case would come to be included under the *myxoma gelatinosum*.

While myxoma is not infrequently met with in the mamma and in other glands such as the salivary glands and the testicle, it is extremely rare to meet with this disease in association with the external organs of generation in the female. Aschenborn (1) records a case of a patient, age 35, who was the subject of a tumour growing from the labium majus for four years, which on removal by extirpation was examined microscopically and found to be a myxoma. Atthill (2) also describes an interesting case of a iii.-para with enlargement of the left labium. At the time of observation the woman was pregnant, the tumour being the size of a walnut. After birth of the child, the swelling of the labium disappeared. This was, however, but for a time, for the labium soon began to increase in size, till at the end of nine months it had become so large as to cause great inconvenience. The growth was enucleated, and found microscopically to belong to the class of myxomatous tumours. Suchard (3) relates a case of a patient, age 35, who had a swelling of the labium majus of two years' duration, unaccompanied by pain. At each menstrual epoch there was congestion and increase in size of the tumour, which became pediculated and reached the size of a fist, and was removed. Macroscopically it was observed to consist of soft gelatinous tissue, and microscopically presented the appearances of a pure myxoma.

It would thus appear that such tumours may develop early in life, or not until a later period; that they seldom give rise to pain, but tend to increase steadily in size; and that operative interference is indicated in all cases as giving most satisfactory results.

REFERENCES.

1. "Myxoma Labii Majoris," *Arch. für klin. Chir.*, Berlin, 1880, vol. xxv., p. 329.
2. "Myxomatous Tumour occurring in the Labium," *Dublin Journ. Med. Sciences*, 1877, vol. lxiii., p. 103.
3. "Myxome de la grande lèvre," *Progrès Méd.*, Paris, 1882, vol. x., p. 747.

The President (*Dr Ballantyne*) said the Society was indebted to Dr Simpson for the paper. He had seen the operation. It looked difficult until all the vessels had been tied, but in the end was comparatively simple. The pathological report was interesting.

Dr Angus Macdonald described a somewhat similar case he met with about four years ago. The patient was a married woman about 19 years of age, and when first seen was seven months advanced with her first pregnancy. She had then a swelling on the right labium majus, about the size of a duck's egg, presenting much the same characteristics as in Dr Simpson's case. It appeared to be growing rapidly, and caused much discomfort because of its size. As it began to weep profusely, and as he was afraid it might cause septic or other complications at the time of confinement, he excised it freely. The operation was easily performed, and no difficulty was experienced with hæmorrhage. The patient made a perfect recovery, went to full-term, and was safely delivered. Three years later she reappeared about half-term with her second pregnancy, and with a precisely similar swelling of the same labium. The tumour was again excised, and the wound healed well. He had not seen her since. During the three years' interval between pregnancies she had kept well, and had no symptoms of recurrence. On both occasions the tumour tissue was submitted to pathological experts, and pronounced a pure myxoma.

Mr E. S. Carmichael described a case where a large tumour

grew from the mons veneris and extended to the middle of the thigh. On microscopic examination, it turned out to be a fibro-lipoma. Tumours of this region had been described in two groups:—(1) Fibrous or lipomatous, arising from the mons veneris; and (2) a group arising from the labia majora, which, according to Sänger, are probably associated with the labial attachment of the round ligament. He would like to ask Dr Simpson the exact anatomical site of the tumour, and as to whether it did not come under this second group associated with the round ligament. Many of the described cases had been associated with an inguinal hernia, and their origin was supposed to be due to irritation of the attachment of the round ligament. A primary myxoma in this region was extremely rare, and most cases recorded were myxomatous degenerations of fibroid or other pre-existing tumours.

Dr Malcolm Campbell said there was some doubt as to the existence of a pure myxoma. In all such tumours other tissues were present. Pozzi grouped together fibroma, fibro-myoma, and myxoma; there was a gradual transition from an œdematous fibroid to a myxoma. In all cases you had the same tissues. You found the same transition from myxoma to myxo-sarcoma, in which case you might get metastatic deposits. Clinically, this possible combination of myxoma with sarcoma must be kept in view. The term myxoma was not universally agreed to. It was better left alone.

Dr Barbour Simpson thanked the Fellows for their remarks. Dr Angus Macdonald's case was most interesting, and owing to ·ecurrence he would look out for the possibility of this happen-ng in his own case. The exact situation of the growth was the niddle third of the right labium majus. As far as he could nake out, it did not grow from the round ligament. There was o history of hernia.

VI. DELIVERY OF THE HYDROCEPHALIC FŒTUS BY SPINAL TAPPING: A SECOND CASE.

By J. W. Ballantyne, M.D., F.R.C.P.E., Lecturer on Midwifery and Diseases of Women, Medical College for Women, and Surgeons' Hall, Edinburgh; Physician to the Royal Maternity Hospital, Edinburgh.

Little more than a year ago, I communicated to the Edinburgh Obstetrical Society the record of a case of fœtal hydrocephalus, in which I delivered the infant by means of spinal tapping (*Brit. Med. Journ.*, ii., for 1904, p. 1567; *Trans. Edin. Obstet. Soc.*, xxx., 20, 1905). The spinal canal was opened into in the dorsal region, a metal catheter was passed up into the cranial cavity, the fluid contents were drawn off, and the child, a large male, weighing 12 lbs. (along with the fluid), was then easily extracted by manual traction upon the trunk. I have recently had an opportunity of repeating this procedure in a similar case, and I place this new instance upon record partly because of its rarity, partly on account of some interesting facts in the mother's previous obstetric history of which I was cognisant.

About 1.20 A.M. on November 28, 1905, a message came to me asking me to go down to Leith to help Dr Millard with a difficult labour. The patient, I was told, was a multipara, and the presentation was a breech; the breech, however, was still at the pelvic inlet, and the sacral promontory could be easily felt. I went to the case, therefore, expecting to have some difficulty in getting hold of the feet and in pulling the infant through what was no doubt a narrow pelvis. I was not wrong in my prognostications, but, as will be seen, it was fœtal in addition to maternal dystocia that I had to deal with, and the method in which the obstruction was overcome was quite different from any which I expected to employ.

On my arrival at the house I was told by Dr Millard that

the patient had given birth, in 1898, to an anencephalic fœtus, and that I had examined and reported upon the specimen. Some of the facts of the case then came back to my mind, but I did not gather them all together until my return from the confinement, when I was able to consult my list of teratological specimens and my notes on them. I shall return to the past history of this patient later; in the meantime I simply note the previous birth of an anencephalic fœtus in her case, for it served to help me to a diagnosis of the cause of delay in the present labour.

The patient was a strong, healthy woman, 46 years of age, and 5 feet 8 inches in height. She was one of a family of five sisters and one brother, all healthy and taller than herself. Neither she nor her husband showed any signs of any morbid diathesis. This was her fourth pregnancy, and during its course she had felt far from well; she was, as she herself put it, "quite unfit for her work, although she had always been a good worker." Nevertheless she reached the full term; and at 6.30 on the evening of November 27, the membranes burst, and the liquor amnii, which was not excessive in amount, came away. Slight pains came on at 9.30, and these became severe and regular at 11.30. The patient noted, however, that the pains were different from those she had had in former confinements: they went upwards, she stated, towards the chest, instead of downwards towards the thighs. It is, of course, a common observation that the pains in obstructed labours (such as this turned out to be) are irregular in position, time, and strength; but in this instance they seem to have been almost antiperistaltic. Dr Millard was called to the patient when the pains became severe, and he then found the breech at the brim and the pelvis contracted; he sent for me, as I have mentioned, early on the morning of November 28.

I found the patient with a greatly distended abdomen, in which palpation revealed nothing like a hard fœtal head, but

rather a general, even, and rounded swelling extending up to the ensiform cartilage; fluctuation could be indistinctly felt. The breech of a female infant was at the vulva, and a good deal of meconium had been expelled from the child's anus. The labour had, therefore, progressed since Dr Millard had sent for me, and the breech was no longer jammed at the brim, but had come down to the vulva. The back of the child was lying to the front and left side. With some difficulty I brought down the feet and legs. I then passed up my hand, and with still more difficulty dragged the arms down through the brim, which showed a moderate degree of contraction. I then noticed that there was a ruptured spina bifida in the lumbar region of the infant. From this fact, from the former history of the birth of an anencephalic fœtus, and from the large size and peculiar feeling of the uterus, I now came to the conclusion that I had to do with a case of hydrocephalus, in which the greatly distended head was lying above the pelvic brim.

With little hope of success, I tried to draw down the head by traction upon the body; no effect was produced. Had I then attempted to have perforated the fœtal head I should have met with great difficulty, for the pelvic brim was narrow and the head was quite above it: but I had no intention of trying this plan, for experience had taught me an easier, a safer, and a more expeditious way of delivering the aftercoming hydrocephalic head. I determined to utilise the opening into the spinal canal in the lumbar region, and to pass a catheter up through the canal and into the cranial cavity, and so to draw off the fluid and allow the head to collapse. This manœuvre I had successfully carried out in the previous case which I recorded a year ago, and it seemed to me that it ought to be equally efficacious in the present instance. In that case, however, I was able to choose the level at which I opened into the spinal canal, and I, of course, chose one as high as I could, so as not to require a longer tube than was necessary. In the present

case the level of the opening was decided for me by the position of the spina bifida; and I, therefore, required a long silver catheter to reach the interior of the cranium, for the spinal defect was, it will be remembered, in the lumbar region. Dr Millard procured for me a male silver catheter, No. 6, and it answered the purpose well. I made a slight incision over the membranes covering the orifice of the lower end of the upper segment of the spinal canal at the spina bifida, and passed the catheter upwards into the cranium. I had previously straightened the instrument somewhat, as I did not require so marked a curve. When I felt the tip to be lying free in the cavity, I moved it about in various directions so as to make sure of reaching all the parts of the hydrocephalic sac. The fluid (quite clear, and of a faint yellow colour) then began to flow freely, and in a few seconds Dr Millard, whose hands were on the abdominal walls, said that he could now feel the bones of the collapsing hydrocephalic head quite easily. When the water ceased to flow from the catheter, I made traction on the trunk of the infant. There was some difficulty in drawing the head, collapsed as it was, through the brim of the pelvis, on account of the contraction which existed there; but this was easily overcome, and the birth rapidly completed. The placenta came away a few minutes later; but the membranes were adherent, and had to be extracted manually from the uterus. There was little hæmorrhage.

The infant, a female, weighed more than 10 lbs. after the head had been re-distended with water; and the circumference of the head in the occipito-frontal plane was 57 cms. (23 inches). The placenta was large, but rather thin, a peculiarity which had been noticed in connection with that of the anencephalic fœtus also; otherwise it appeared to be normal.

In connection with this case, two somewhat interesting subjects (among others) call for consideration and comment: one of these has reference to the clinical history of the patient,

and the other to the operative treatment which was adopted to overcome the difficulty in labour.

The obstetric history of this woman may be briefly narrated. She was first pregnant in the year 1895, when she was thirty-six years old. The infant, a female, was born six weeks before term. It was dead, and the doctor who then attended her said to her that it had been dead for six weeks. No cause for the fœtal death was known except a fright. The second pregnancy was in 1898. She was then under Dr Millard's care. There was persistent vomiting in this pregnancy. Life was first felt at the beginning of the seventh month, and labour came on a week later. There was marked hydramnios, the quantity of liquor amnii, of a turbid brown colour, being estimated at 2½ gallons. The fœtus, a female and anencephalic, was extracted with the aid of forceps; and the placenta was entirely adherent, and had to be removed manually. The placenta was large and thin, no part being more than half an inch in thickness, and some parts being only a quarter of an inch; in other respects the afterbirth had a normal appearance, save for one or two fatty patches; the membranes seemed normal. The fœtus had all the external appearances of anencephaly: there was complete absence of the cranial vault; the face looked directly upwards and the cranial base directly backwards; there was no indication of the neck groove in front, and the ears were deformed. The spinal canal was open down to the level of the upper end of the sacrum. The hands, feet, and external genitals were normal. Death had evidently occurred a few days before birth, for the skin was peeling off in several places. The sectional examination of this fœtus revealed an unexpected malformation associated with the anencephaly, viz., absence of the diaphragm on the left side, with displacement of several of the abdominal viscera into the thorax, and dislocation of the heart to the right side of the body.

The third pregnancy of this patient ended in the birth of a

living male child. This was in 1900. The position was an occipito-posterior, and there was difficulty on account of the pelvic contraction as well; but the child was born alive, and is now well and healthy. I saw him the night that I was called to his mother's fourth confinement; he was then five years old, was well grown, and had no malformations of any kind. The details of the fourth pregnancy I have already given; it ended at full-term in the birth of a hydrocephalic female fœtus, and there was no hydramnios.

The first detail in this woman's history which calls for comment is the birth of two monstrous fœtuses, an anencephalic and a hydrocephalic. I do not know what was the state of the product of the first pregnancy: it also may have been deformed, but I have not been able to settle the point; at any rate it had been dead *in utero* long before its expulsion. Even if the first pregnancy be left out of consideration, we have here to do with four labours, two of which ended in the birth of monstrosities; in other words, fifty per cent. of this woman's infants were teratological. Now, the rarity of the occurrence of markedly teratological births in obstetric practice is very great; even the commonest monstrosity (anencephalus) does not occur oftener than once in two or three thousand cases, while hydrocephalus is said to be met with once in three thousand births. Out of 350 cases of monstrosity and fœtal disease that I have had an opportunity of examining, there have been forty-nine anencephalic fœtuses and eight hydrocephalics, or fourteen and two per cent. respectively. Two explanations may be advanced to account for the frequency of teratological developments in this woman's offspring: either we have to do with a simple coincidence, or else she was the subject of what I have called recurrent monstriparity. I am strongly of opinion that the association of the two teratological conditions was not coincidental but relational in this patient. Without going any further than the cases which have come

under my notice, I find too many instances of this tendency to recurrent monstriparity to be explained by the theory of coincidence. With regard, for instance, to anencephalus, in three at least of my forty-nine cases, the mother twice gave birth to this type of monstrosity. Outside of my clinical material, there have been numerous instances of two or three anencephalic fœtuses being born to the same mother. Further, a remarkable case was reported in 1840, in which six out of a family of nine infants were anencephalic, and one other was also a monstrosity, although not anencephalic (J. Martin, *Med. Exam.*, Philadelphia, n.s., v., 23, 1840). Again, to return to my cases, a woman may give birth to an anencephalic fœtus as the result of one pregnancy, and to a hydrocephalic fœtus as the result of another: I have met with two instances of this association, the one described in this article, and another to which I shall refer immediately. Hydrocephalus also may show this peculiar family prevalence, although I have not met with a case of it. I have, however, met with an instance in which a woman gave birth at one time to an iniencephalic fœtus, and at another to a hydrocephalic one. I have noted this same tendency to recurrence in connection with fœtal diseases, and cases are on record in which one woman has given birth to two or more fœtuses with general dropsy or with ichthyosis, or with jaundice (due to obliteration of the bile-ducts); so that the phenomenon is not peculiar to monstrosities.

The best example I have met with of recurrent monstriparity was that which I reported in 1900 (*Amer. Jour. Obstet.*, xli., 577, 1900). It was that of a healthy woman, well formed but for the absence of certain muscles of her thumbs, an anomaly which she had in common with her mother and a sister. Her first child, a boy, was well formed; so was her second, likewise a boy. Her third pregnancy ended in an abortion. Her fourth gestation resulted in the birth of a hydrocephalic female fœtus, with absence of the right thumb and radius.

Her fifth child, a girl, was born alive, and is still alive and well. Her sixth was a post-mature dead-born anencephalic female fœtus, with a malformed thumb and other malformations. Her seventh was a congenitally weak female infant, who survived for only six weeks; and her eighth was a prematurely born female infant, with early hydrocephalus, absence of both radii and right thumb, malformed state of left thumb, and a battledore placenta. In this instance, as in the one which I have put on record now, both hydrocephaly and anencephaly occurred in the obstetric history of the same patient, and in one of these instances there was also a curious hereditary tendency towards malformation of the thumbs. To the phenomenon which I have illustrated by these various cases, I have thought that the name Recurrent Monstriparity is most appropriately given. The term Family Prevalence is hardly suitable, for it has generally been given to the cases in which several brothers or sisters are affected with the same disease; in the instances to which I have referred the monstrous state is not necessarily the same, and there is rather the tendency to give birth to malformed infants than to infants with any special malformation. It is interesting to note that experimental teratogeny, so far as it has been successful, would seem to be governed by the same laws; for it has been found that while it is possible to produce monstrosities artificially, it is not possible to produce any given type of monstrosity.

Another interesting feature, both in the case recorded in this communication and in my case of 1900, is the sex preference shown by the teratological states. In both histories the females were affected, and not the males: in one instance the mother gave birth to three malformed or dead female fœtuses and to one healthy male; in the other, she had two healthy boys and five girls, of whom three were monstrous, one died in six weeks, and one only was healthy. This sex-preference has been noted by many teratologists, and I have had examples

of it in the material I have collected. It must be remembered that it has been stated that monstrosities of all kinds are commoner in females than in males; and this is certainly true for anencephalus, for out of forty-nine anencephalics that I have had sent to me, thirty-one were females and ten only were males (in eight the sex was not noted). But sex-preference does not always bear this out; for there are cases on record in which male fœtuses have shown the teratological development, and not female.

One other observation I have been able to make with regard to recurrent monstriparity. It is that the monstrosities bear some resemblance to each other, if not in appearance, at least in origin. Thus hydrocephalus, spina bifida, and anencephalus come together in the same family history; they are all malformations of the nervous system, and they probably all originate in the same way (although that way may not yet be agreed upon). This fact reminds us of the manner in which morbid phenomena, such as the manifestations of the rheumatic diathesis (joint pains, heart disease, chorea, subcutaneous fibrous nodules), also tend to affect various members of the same family. We are almost forced to the conclusion that there is a sort of monstriparous diathesis, or, I prefer to say, a special tendency to the appearance of antenatal morbid states, both teratological and nosological, in the reproductive history of the same woman.

From the study of these facts I think some conclusions can be drawn. In the first place, we are forced to believe that when a woman has given birth to a malformed fœtus, it is very likely that she will do so again. Instead of the fact that she has had one monstrosity, making it almost absolutely certain (by the law of averages) that she shall not have another, it rather makes it likely that she will again give birth to a monstrosity, although not necessarily of the same kind as before. This, I think, is one reason why one medical man

will meet several monstrosities in his first thousand midwifery cases, while another will go through all his life without chronicling a single one. The former has a monstriparous family in his clientele, the latter has not. Again, it must be concluded that a monstrosity tends to recur in the same or in an allied form, *e.g.*, anencephalus occurring twice or thrice, or alternately with hydrocephalus and spina bifida. Yet again, if the monstrosity be of one sex, the recurrent malformation will most probably occur in an infant of the same sex. I hope elsewhere to expand these conclusions and give deductions from them in more detail, but I must devote the remaining part of this contribution to some remarks on the obstetric interference undertaken in the case I have described.

In my communication to this Society last year (*Trans.*, xxx., 20, 1904-5) I gave, at some length, details of the method of delivering the aftercoming hydrocephalic head by spinal tapping. I need not repeat these details here, except as regards one particular in which they differed from those employed in the present case. After I had drawn the body of the fœtus down to the vulva, I found that there was a spina bifida (there was no spina bifida in my first case), so I used the teratological opening into the spine instead of making an artificial one. The only inconvenience was the low level of the opening; but had I met with the slightest difficulty in reaching the cranial cavity, I could at once have made an opening in the upper dorsal region. I think it will be found necessary always to use a metal catheter to draw off the fluid. At any rate, a former pupil recently furnished me with the details of a case in which a rubber catheter was tried and the fluid not reached. The object of the operation, in one sentence, is to overcome a grave obstruction existing above the pelvic brim by a simple operation performed outside the vulva; the two cases I have reported prove that this object is admirably accomplished.

Dr A. H. F. Barbour remarked that the observations were of very great interest, although they did not throw any light on the causes of the tendency to monstriparity or on the frequency of anencephalic fœtuses of the female sex. They were greatly indebted to the President for his interesting paper. It left room for a great amount of speculation.

Dr J. Ritchie said the important point was, that by his (Dr Ballantyne's) manipulation he was able to deliver the child with very little interference with the mother, and a consequent diminution of the danger of sepsis.

Dr Haig Ferguson asked if there was any history of specific disease where monstriparity recurred in families. He considered that was an important point, but Dr Ballantyne had not mentioned it. Did spina bifida often occur in cases of hydrocephalus? and if present in a breech case, would Dr Ballantyne infer that the child was hydrocephalic? Hydrocephalic cases commonly presented by the breech. Tapping the spinal cord had long been recognised in treatment. He pointed out the difficulty of passing a gum-elastic catheter, and they did not always carry silver catheters with them. In such a case they would have to do perforation, which, if need be, could always be done with a pair of scissors. Where the catheter could be got, the treatment was admirable. The paper was extremely interesting.

Dr Nicholson said he had seen an exceptionally large number of monsters during seven years of midwifery practice at Kirkcaldy. Curiously enough, he had never seen recurrence in the same family; the mothers, after their other pregnancies, had had normal children.

Dr Barbour Simpson said he was much interested in the paper. In the last few months eight anencephalic fœtuses had reached the University Midwifery Department, of which seven were of the female sex. Some time ago he showed an anencephalic fœtus which might have been due to maternal

impression; the mother in the early weeks of her pregnancy having seen a headless child which her sister had given birth to. It might also have been due to a mere hereditary coincidence occurring in the two sisters.

Dr Wood said his experience would lead him to the conclusion that specific disease had something to do with the causation of monstrosities. Some years ago he had a case of hydrocephalus with spina bifida, in which there was undoubted evidence of specific disease in one of the parents. In another case of an anencephalic fœtus with an encephalocele, which he showed to this Society on May 13, 1891, the parents were both mutes, and in the mother's case the deafness was due to inherited syphilis; the father also had a history of syphilis; two or three years afterwards he confined this woman again of an anencephalic child. In another case of an anencephalic fœtus with hydramnios, which occurred in his practice about four years ago, Dr Patrick Murray, now of Leven, was acting as his *locum tenens* and attended the case; the woman had suffered for some years from disseminated spinal sclerosis, and about eight years before the birth of this fœtus she had contracted syphilis from her husband. The woman has since died of the sclerosis. This fœtus was sent to Dr Ballantyne.

Dr J. W. Ballantyne (*President*) said Dr Barbour had raised the question of the causes of the tendency to produce monsters. He (Dr Ballantyne) considered they must approach antenatal morbid states from exactly the same standpoint as any other problem in medicine. They should expect monstrosities to occur in families just as they came across rheumatism, gout, heart disease, and insanity. In the latter instance, the other functions and organs of the individual and his relatives might be perfectly sound, but he was morbid along the line of his brain. In the same way a woman might be morbid in producing morbid children, but healthy in every other respect, and quite well in other parts of her reproductive history. They should

apply the ordinary rules of pathology to these conditions; after all, they were simply a part of pathology. There was no doubt about the frequency of anencephaly in the female sex, but the cause was not clear. The condition was very rare in the lower animals—one or two doubtful cases had been described. That was very striking; cyclops fœtus was rare in man, but common in the pig. With regard to specific disease as a cause, out of 350 specimens examined by himself and 150 reported to him by others, in only about a dozen was there a history of syphilis. He had been struck with the rarity of syphilis in those cases. The presence of spina bifida always suggested hydrocephalus. It had been suggested that hydrocephalus developed after the closure of a spina bifida, but he had described a specimen which showed it present before there was any cephalic enlargement. He claimed for the operation of spinal tapping greater ease and safety. They might not have a long metal catheter with them, but all usually had a short one, and they could tap in the cervical region with it. He would press that operation on the notice of the Society, because all intra-uterine manipulations were to be avoided if possible. It was very simple, and could be easily done.

MEETING III.—JANUARY 10, 1906.

Dr J. W. BALLANTYNE, *President, in the Chair.*

I. The following lady and gentlemen were elected Ordinary Fellows of the Society:—Miss Barbara Cunningham, M.B., Ch.B., 4 Torphichen Street, Edinburgh; W. T. Chouhall, M.D., Macquaira Street, Sydney; Alex. Angus Martin, F.R.C.S.E., 25 Northumberland Square, North Shields; James A. Gunn, M.A., B.Sc., M.B., Ch.B., Materia Medica Department, University Buildings, Edinburgh.

II. *Dr J. W. Ballantyne* (*President*) showed AN APROSOPOUS FŒTUS. The three chief parts of the face, the nose, mouth, and eyes, were defective. There was a rudimentary eye on the top of the head, and a small aperture representing a rudimentary mouth. A small sac on the back of the head represented the brain. The other parts were normal. That was the lowest type of a long series of deformities of the head and face which might occur in the single fœtus; to obtain lower grades of development, the fœtus must be a twin (*e.g.*, the acephalic and acardiac twin).

III. *Dr A. H. F. Barbour* showed—(*a*) FIBROID TUMOUR from a patient aged 45, who had been married nine years and had had no children. Tumour was first noticed nine years ago, when the size of an orange. It had steadily increased in size, but eight months ago it began to grow rapidly. She had severe pain and menorrhagia. The tumour reached up to the umbilicus and projected markedly forwards. On operation, both tubes were found enlarged, and filled with caseous material. Many adhesions were present. The fundus uteri was at the top of the tumour which was thrown abnormally forwards. (*b*) FIBROID TUMOUR from a patient aged 41, who had been five years married and was sterile. The uterus lay horizontally in the pelvis, the fundus turned to the right side. The tumour reached to the costal margin. She suffered from pain, but no menorrhagia. On operation, the tumour was found to fill the pouch of Douglas, and was bound down by adhesions. The bladder was lifted up by the tumour (*c*) FIBROID TUMOUR which caused the uterus to lie horizontally in the pelvis, with the fundus at the level of the sacral promontory and the os towards the symphysis. Patient had had one child delivered without difficulty in May 1904. The upper part of the tumour was present then, but the pelvic part began to grow afterwards. The labour was normal, and no excessive hæmorrhage present.

The fibroid was removed fifteen months after parturition. One part from the anterior wall grew up into the abdomen, and another part from the posterior wall passed down into the pouch of Douglas.

IV. A CASE OF ECLAMPSIA FOLLOWED BY PUERPERAL MELANCHOLIA, WHICH WAS TREATED WITH THYROID GLAND SUBSTANCE.

By W. E. Fothergill, M.A., B.Sc., M.D., Lecturer in Obstetrics, University of Manchester; Assistant Gynæcologist to the St Mary's Hospitals for Women; and Assistant Physician to the Northern Hospital for Women.

Bearing in mind the interest which has been displayed by members of this Society in puerperal eclampsia and also in the varied therapeutic applications of thyroid gland substance, I venture to submit the following isolated observation without waiting for other cases to occur in my own practice. The theoretic considerations which it illustrates are familiar to the members of the Society. I therefore submit a simple record of the case, in the hope that additional observations may be added by others as occasion may arise.

Mrs B., æt. 44 years 9 months, was admitted to a private nursing home on 3rd April 1905, being then within a few days of the end of her first pregnancy. The urine contained a trace of albumin, but was otherwise normal in quantity and constitution. There was slight œdema of the hands and feet. The general health during pregnancy had been good. Constipation had been prevented by the use of aperients. The patient had been married for three years; menstruation had always been normal, and the personal and family history presented no feature of interest. During the week following admission, the œdema disappeared and the urine became free from albumin. The only treatment employed was extra attention to the bowels, and restriction to light and mainly vegetarian diet. On 10th

April labour began at about 6 o'clock A.M. Dilatation went on satisfactorily during the day, and was complete at about 7 o'clock P.M., when the character of the pains changed and voluntary expulsive efforts began. The membranes were then ruptured and the head descended gradually on to the perineum. Having in view the age of the patient, I judged that the use of the forceps would be required sooner or later, and at 9 o'clock I had the instruments prepared for use by boiling. I was in the act of opening a bottle of chloroform, with a view to administering a little during each pain, when the patient began picking at the bed-clothes. Her eyes then became fixed, and a moment after she was in the midst of a violent eclamptic seizure, which passed off after some three minutes, leaving the patient semi-conscious. I immediately sent for a colleague, who arrived in a quarter of an hour, and at once anæsthetised the patient, in order that I might deliver her without bringing on another fit by the necessary manipulations. The forceps being applied, I incised the perineum on each side, and gently delivered the child, at 9.20 P.M.[1]

As the mother had a full, hard pulse, we decided that bleeding would be beneficial. I therefore partially separated the placenta as soon as the child was born, and allowed blood to flow from the placental site until about 15 oz. had escaped. I then completed the separation of the placenta and membranes, and put a catgut stitch in each of the lateral incisions in the perineum.

By 11.30 the patient was fit to be left, though not quite fully conscious. Next morning her condition was quite satisfactory, but the pulse was full and hard. At 1 P.M. I saw her again (sixteen hours after labour), and whilst talking to me she was again seized by the most severe convulsion I ever witnessed.

[1] Artificial respiration, with the use of the hot bath, and sprinklings of cold water, was continued for one and a half hours before the child breathed well and independently.

The patient appeared to be in danger of immediate death from cerebral hæmorrhage, so I opened a vein with my pocket-knife, after twisting a towel round the upper arm, and collected 18 oz. of the blood which escaped. I then had a complete hot wet pack applied.

During the afternoon a consultation was held, and it was decided that if there were any threatenings of a further attack I should bleed her again in the evening. Meanwhile she was bathed in perspiration, and was kept in the wet pack, surrounded with hot-water bottles, which were renewed from time to time.

In the evening at 7 P.M. she could be roused without difficulty, but when undisturbed her breathing was stertorous, and there was slight facial twitching. The pulse was once more hard, full, and slow. I bandaged the arm and allowed blood to flow until the pulse became soft and more rapid. The blood collected measured 15 oz. The wet pack was continued through the night and all the next day, though the condition was then quite satisfactory. Rectal lavage was done every day subsequently, and the diet was restricted to milk. At this time there was a moderate amount of albumin in the urine, but it rapidly disappeared. The patient complained of very bad headache, limited to one side of the head. She spent most of her time asleep, and said the headache was worse on waking.

On the fourth day the child died, which upset her considerably. At the end of the week, however, her condition was in every way satisfactory except for the headache. At the end of the second week she was out of bed for an hour or two at a time. The headache was better when she was propped up than when lying flat in bed, but still continued. She was eating well, the diet being still vegetarian.

On the fifteenth day (17th April) the headache was troublesome, and after being restless in the afternoon, the patient was rather hysterical in the evening, the temperature

rising to 100·5°. This one evening, it may be mentioned, was the only occasion during the whole of the illness on which the temperature rose above 99° Fahr. The next morning (sixteenth day) signs of melancholia appeared. She refused food entirely, and became irrational. Speech was affected, and was muttering and unintelligible. She slept heavily hour after hour, and could only be roused with difficulty, when she recognised no one, would not do anything she was told, and uttered no word except an attempt at "sleepy." The pulse was very slow, on some occasions being only 46 per minute; its character was good. There was at this time no albumin in the urine, which was normal but for the presence of a large quantity of urates. On two or three occasions it was passed in the bed. Though the bowels had been moved regularly, the alvine evacuations must have been incomplete, for on employing intestinal lavage quantities of very foul-smelling material were passed during the next few days. The condition of stupor continued for several days, with one or two attacks of restlessness, which were relieved by a few doses of bromide of potassium. After the first day of the melancholia there was no great difficulty in administering nourishment, washing out the bowel, and the like, though the patient did not help herself for several days.

When the low condition, constant sleep, slow pulse, and inability to speak had continued three days, I began giving 5 grs. of thyroid substance each day. This was done because this substance has proved invaluable in the pre-eclamptic state in my own hands, and has given good results even in actual eclampsia in the hands of Oliphant Nicholson and other observers. I have been teaching since the year 1900, that the poison is the same or nearly the same in eclampsia, in the melancholia, the mania, the amblyopia, and in the poly-neuritis of pregnant and puerperal women. Gurney pointed this out (*St Thomas's Hospital Reports*, vol. iv.). "The cortical cells in the brain," he says, "the motor nuclei in the pons,

the purely sensory tract of the optic nerves, the nerves of the medulla, and finally, those of the extremities, all in turn may suffer from the effects of the poison." This is the first case, however, in which I have observed both eclampsia and melancholia in the same patient.

The pulse-rate gives an indication of the action of thyroid substance, and I observed an increase of five or six beats per minute after two tabloids had been given. After the third the pulse-rate rose to sixty, and a considerable improvement was noticeable in the patient's general condition. This was seven days from the onset of the melancholia, and daily progress was made subsequently. The patient began to recognise us and to help herself. We got her out of bed again a day or two later, with a view to having her removed to the country as early as possible. By 4th May she talked about members of her family, but mixed their names. She recognised an uncle who came to see her, and burst into tears on doing so. On being asked the next day if she had seen her uncle, she remarked, "Yes, we all cried." She was now conscious of some mental incapacity and also of loss of memory. The pulse was seventy, the tongue was clean, and the bowels were again in perfect order. The urine was normal. The patient was again taking food well, and slept all night and most of the day. On 6th May she was put in a carriage and driven twenty-four miles to the home of a relative. Her doctor met her on arrival, and found her physical condition perfectly satisfactory, memory badly impaired, and speech defective. She was, however, quite sensible, and was conscious of her mental state. The treatment by thyroid substance was continued, and the dose was not increased, since the small quantity given was found to affect the pulse-rate very considerably.

On 15th May the doctor wrote that the patient was practically well. "The time from the confinement until her removal from

the nursing home seems to have slipped her memory, and remains a blank." The use of thyroid substance was then stopped. In October 1905 the patient remained perfectly well.

The nervous diseases associated with pregnancy and the puerperium are striking examples of toxæmic states which are associated with defective metabolism and also with absorption from the intestinal canal. While we are unable as yet to prove the relationships of these factors in the causation of the toxæmias of pregnancy, we have abundant clinical evidence that these toxæmic states are eminently amenable to medical and hygienic treatment. Let chorea during pregnancy serve as a single example. Many cases have ended fatally, and the artificial interruption of pregnancy has been demanded in many more, not always with favourable result. We find, however, that it is possible to control the condition in most cases by the same treatment which is employed in threatened eclampsia or the pre-eclamptic state. The patient is kept in bed, her bowels receive careful and vigorous attention, the large intestine being washed out daily. Her diet is restricted to milk and vegetable substances. Her skin is made to act either by hot baths, by steam or hot-air baths, or by prolonged wet packs. Further,[1] thyroid substance may be freely given as a stimulant to the metabolic changes. By these methods it is found possible in most cases to avoid interference with pregnancy, and to obviate all risk to life.

The melancholia and mania of pregnancy and the puerperium should be regarded as toxæmic states affecting the mental functions and demanding similar treatment. The mental disturbances associated with child-bearing receive but little attention, probably because it is realised that most of the

[1] A colleague, Dr Shaw, has now in preparation for publication a series of records of cases of chorea gravidarum treated with thyroid substance.

patients ultimately recover under merely expectant treatment. But if we consider the amount of suffering caused by these conditions, especially the mental pain inflicted upon the relatives and friends of the patients, it is clear that recovery in those cases should be hastened by every means in our power.

It is one of the best traditions of the profession that those mentally afflicted during pregnancy and the puerperium should be treated at home when possible. For various reasons, however, many cases are treated in our asylums. A useful piece of clinical work could be done if some of our colleagues would ascertain, by reference to their records, the average duration of these cases as treated hitherto, and would also ascertain by clinical experiment whether this average duration could not be shortened materially by active anti-toxæmic treatment.

Dr Frederick Porter instanced a case of albuminuria, which came on at the fifth month. It developed into mild melancholia. Was that due to the albuminuria, or to some other toxin? He thought the paper was of peculiar interest, and considered that the toxin of eclampsia might set up melancholia. The same thing occurred in alcoholism. He could not see why one toxin circulating in the blood might not produce one effect and be followed by others. They could have in eclampsia a condition of great cerebral congestion which might cause melancholia as an after-effect.

Dr A. H. F. Barbour said the paper was very interesting, but they must not be led into accepting a theory on what might be only a coincidence. In all their cases of eclampsia, had they ever seen mental symptoms developing sufficiently often to justify the occurrence of the two together to be more than a coincidence? He did not think they were warranted in theorising that they were dealing with the same toxin in both cases. The evidence went to show that where mental symptoms

developed, the cause was more allied to sepsis. In cases of insanity following labour, they often began with a high temperature. He considered these were two distinct types of nervous condition, and their combination was merely a coincidence.

Dr Nicholson said there seemed little doubt that pregnancy could give rise to a toxæmia which had a selective action on the nervous system; the toxins might, under certain circumstances, affect the brain, spinal cord, or peripheral nerves. Hence epilepsy, eclampsia, chorea, myelitis, and peripheral neuritis might all be due to the same toxin. The *rôle* played by the thyroid and parathyroid glands in the production of this toxæmic state during pregnancy was not yet clear, but evidence was accumulating to show that the metabolic and antitoxic functions of these glands were often unduly taxed by pregnancy. It was quite clear from experimental work that pregnancy, and also lactation, was capable of rendering active a thyro-parathyroid insufficiency, and then a toxæmia arose which produced disturbances of the nervous system. Small doses of thyroid were beneficial in some cases of hyperemesis gravidarum associated with mental depression, and also in the depression which accompanied certain symptoms appearing towards the end of pregnancy, when eclampsia seemed to be impending. Small doses of thyroid, by stimulating the metabolism, increased the urine, and cured headache and sickness. Large doses were only indicated in actual eclampsia, and were used for quite a different purpose: for their vaso-dilator effect. There was possibly a connection between eclampsia and puerperal insanity; the toxic substances might be the same. The significance of the slow pulse was apt to be overlooked, and yet, in his opinion, it was a symptom of great importance. It strongly suggested a toxic condition dependent upon a thyroid insufficiency; at all events, it gave no support to the view that the patient was suffering from the effects of loss of blood or exhaustion. Improvement in the patient's mental condition coincided with a

quickening of the pulse-rate, under the action of thyroid. He considered the paper a most interesting and valuable one.

Dr Keppie Paterson pointed out that the cases of melancholia benefited by thyroid had been chronic cases of the disease, or torpid cases with deficient nerve power. He was doubtful whether the thyroid had had any benefit in the case described. It may have acted as an eliminant, which seemed to be its use in eclamptic cases.

Dr James Ritchie said he would have liked to know if there had been any mental troubles in the family. In all mental cases associated with excitement the administration of thyroid was prejudicial; it was only useful in cases of depression. It was a new idea to him that eclampsia and melancholia were due to the same poison. In all cases of eclampsia there was a peculiar condition of the nervous system, but whether the melancholia was induced by the previous eclampsia was quite a different matter. He did not think Dr Fothergill had proved that the melancholia was dependent on the eclampsia.

Dr J. W. Ballantyne (*President*) said Dr Fothergill had probably published the case, not as proof, but merely to collect evidence from the experience of other men. Their united experience that evening was negative. He had seen a case of puerperal melancholia, but it was probably due to sepsis.

V. THE USE OF THE STEREOSCOPE IN THE TEACHING OF OBSTETRICS AND GYNÆCOLOGY.

By G. F. Barbour Simpson, M.D., F.R.C.P.E., F.R.C.S.E., Senior Assistant to the Professor of Midwifery, University of Edinburgh; Gynæcological Tutor to the University Class of Clinical Medicine, Royal Infirmary, Edinburgh, etc.

During the last few years the stereoscope has come to be recognised as something more than a mere scientific toy, and the thought has more than once occurred to me how far it might

prove of service in conveying to the mind of the student a more intelligent understanding of certain parts, at any rate, of the two branches of medicine, viz., Obstetrics and Gynæcology. On talking the matter over with Mr Burnet, who assisted Dr Waterston in the work of the *Edinburgh Stereoscopic Atlas of Anatomy*, he kindly offered to take some stereoscopic views under my supervision, which I am glad to have the opportunity of showing to the Society this evening, in order that as far as possible you may see and judge for yourselves of the improvement that such representations have over anything that can be reproduced in ordinary text-book illustrations. And taking Obstetrics in the first place, there is perhaps no part of that subject more adapted for illustration in this way than the female bony pelvis, which can be represented first in its normal aspect, after a study of which the student will be in a better position to detect the various types of deformities, the characteristic features of which he can see depicted in some of the views placed before him. The study of the pelvis, normal and abnormal, would in this manner I feel sure aid the student in his endeavour to overcome many of the difficulties which present themselves in the perusal of his notes or text-book, and which it is impossible for him to fully appreciate even with the aid of wall diagrams or text-book plates.

Amongst the views placed before you is one illustrative of the pathology of pregnancy, viz., myxoma of the chorion, which shows the vesicles of varying size floating in their liquid medium, and which conveys a striking impression of this morbid condition. Wherever possible, corresponding reproductions of different morbid states associated with pregnancy could be so demonstrated. So, likewise, the various obstetrical operations, *e.g.*, forceps, beginning with a view illustrating their component parts, followed by a series of views showing their mode of application.

In regard to Gynæcology, the value of the stereoscope might

be looked at from three stand-points. Firstly, in the *clinical* teaching of the subject, by having views of various cases of interest, especially where the question of differential diagnosis comes in, the interest of any one case would be greatly increased, and consequently impressed upon the mind of the student. For example, if a case of prolapsus uteri was the subject of clinique, by letting the student see stereoscopic views of inversion of the uterus, uterine polypus protruding at the vulva, or any other condition likely to be mistaken for prolapsus uteri, he would thus be in a position to appreciate in a much greater degree the possibility of errors in diagnosis, and be more prepared to guard himself against such errors. And here I would ask any of those present to have stereoscopic reproductions made of all cases, which would contribute to a valuable gynæcological atlas.

Secondly, the different steps of both minor and major operations, with a short description appended, could be demonstrated by the aid of the stereoscope. I mention minor operations in the first instance, because the importance from the student's standpoint must be manifest to all. He will not make much headway in curetting a uterus, or repairing a perineum, from the mere reading of such procedures. Best of all, he ought to see such operations carried out on the living subject, or next best, be able to study the individual steps by the aid of the stereoscope.

In the views placed before you, you will see among others the necessary instruments required for the operation of curettage figured in one view, and it is a matter of no little importance that the student should have such a synoptic view before mastering the details of the operation itself.

To facititate the description of the instruments, they have been numbered, and in the order of their use, so that at the very outset he may see at a glance the requisite instruments, and then go on to see in subsequent views their mode of employment in the various stages of the operation. And thirdly, a series of

specimens of pathological interest could be reproduced, an example of which you will see represented in a view of a uterus with its cavity exposed, and showing a pediculated fibrous polypus growing from its wall.

Having sketched in brief outline a possible range of usefulness for the stereoscope, I shall be glad of any suggestions or criticism which might render such a scheme yet more beneficial.

Dr A. H. F. Barbour said there was not the least doubt photography conveyed the impression that the student was looking at the thing as it was seen. In ordinary circumstances he preferred diagrams, because he could pick out things he wanted to emphasise. The ordinary photograph was excellent in dealing with a flat surface, but as soon as they dealt with depth, *e.g.*, a view into the pelvis, it was not so useful. With a stereoscope they saw the parts standing out and others receding, in a manner better than in a photograph. The stereoscope gave the idea of depth. The abdominal operations might be well illustrated by that method.

Dr Hart thought the method was an excellent one to apply to the teaching of their subject.

Mr George Chiene said he had applied the stereoscopic method to general surgical work. The specimens were shown first, and then the photographs in the stereoscope. By this method the students' attention was fixed, and they became interested in surgical pathology. The students took great interest in the pictures, and they impressed on the memory things that would not be so impressed otherwise.

The President (*Dr J. W. Ballantyne*) said the subject was a very interesting one, and was sure to be useful in teaching. Dissections showing the fœtus *in utero* might well be demonstrated, and operations represented at different stages.

Dr Ritchie thought the method was a good one, and would

be helpful to students. All methods which facilitated teaching should be hailed with satisfaction.

VI. PYURIA IN THE FEMALE.

By Frederick Porter, M.B., C.M.

My object in bringing this paper before you is to draw your attention to various degrees of pyuria which exist in the female, some of which give rise to no special symptoms referable to the urinary tract. To save any misconception about the term Pyuria, I may say that I use it in its broadest and most literal sense—*pus in urine without any relation to quantity*. A number of years ago I was surprised to find pus in the urines of females who appeared to be suffering from some trivial ailment, and this led me to investigate the condition more fully. My observations have been made in over 300 urines, and as a result I found that out of every four urines I examined, one contained pus and bacteria. The significance of this I hope to be able to show by illustrating cases, some of which at first appear to be quite trivial. I find that females at all ages are liable to a pyuria, but the percentage is greater in the married. Literature on this particular subject appears to be scanty. In the epitome of the *British Medical Journal* of 5th November 1904, Cecchi gives an account of seven cases of cystitis in children shown to be caused by the colon bacillus. In each of these cases a pure culture of colon bacillus was obtained from the urine, vulvar passage in some cases, and from the fæces. He notes that the discovery of the colon bacillus in the vulvar discharges suggests that the path of infection may well be from the anus to the urethra, and not, as has usually been observed, through the intestinal walls or by the blood-vessels.

Dr John Campbell, of Belfast, has a very convincing article in the *British Medical Journal* of 23rd September 1905, on the

"Influence of the Presence of Pus in the Female Urethra on the Progress of Gynæcological and Obstetrical Cases." In 544 consecutive cases examined in private practice, he found that 135 had pus in the urethra or Skene's glands. In the majority it was abundant, but in 10 there was but a trace. Turning to hospital statistics, he found that in 372 patients consecutively examined 135 had pus in the urethra or Skene's glands. The micro-organisms present in the pus of 100 urethras showed staphylococcus pyogenes albus in 96 per cent., streptococci in 6 per cent., and gonococci in 2 per cent. My observations have been confined principally to examining the urines, and my results have been different as regards the bacteriology, as I have found the bacillus coli communis present in the majority of cases; but I will briefly refer to this later.

Osler, in his *Practice of Medicine*, briefly gives the causes of pyuria and the micro-organisms present. He says that when the colon bacillus is present the urine is acid. Before I proceed further, I should like to qualify this statement, as I think it is misleading. I have found that when pus and colon bacilli are present in large amount, the urine is acid; but it is possible to have colon bacilli present though the urine is alkaline.

I found this well exemplified in a case I treated. At first there were large quantities of pus and colon bacilli with acid reaction; as the pus and bacilli became less the acidity decreased till the urine became alkaline, and after the urine had entirely cleared of it again, showed acidity. There was thus an acidity first caused by the organisms present, and under treatment a redux acidity set in, till alkalinity was reached, and finally a cure with a natural acidity.

The causes of pyuria are variously stated (in medical and surgical text-books) to be gonorrhœa, cystitis, pyelitis, and rupture of an abscess into some part of the urinary passages. I wish, however, to first draw your attention to a condition of pyuria which is so slight that I feel in the majority of cases it

would be overlooked, if a careful examination of the urine were not made.

Pus may be present in the urine without causing any symptoms referable to the urinary tract. If I were asked when is a chronic cystitis usually diagnosed, I should answer, when the patient complains of pain and frequency of micturition, tenderness over the bladder, and pus is detected in the urine by the ordinary tests. Before this comes about, before the bladder is so weakened that a small quantity of urine held there causes pain and must be expelled, are there no symptoms which could lead one to diagnose the case sooner, and prevent this more obstinate condition? The answer is difficult, but I think the majority of patients who consult us and whom we find suffering from a chronic pyuria, must have had other symptoms before this condition was brought about. The first case I wish to illustrate was of a very mild type.

M. H., girl, 2 years. The mother informed me that she had lost her appetite; had an irritable temper; usually a good-natured child, now crying without any apparent cause; sleep was disturbed; flushing up at night, pale in colour during the day; muscles flabby, but no appreciable loss of weight. Temperature it the forenoon was normal, evening 100·2°; pulse irregular; tongue moist, with thick yellow fur at back; bowels constipated. This appeared to me to be a dyspeptic condition probably caused by teething, and I treated with a grey powder and bismuth mixture. In a week the stomach condition had improved, but the child still looked ill. On questioning the mother about the urine, she informed me that every night for the last fortnight she had to rise during the night and allow her to pass water. I examined the urine and found a few pus cells and rod-shaped bacteria, reaction alkaline. I now put the patient on Quinine sulphate and a mixture of Acid nit. hydroch. dil. and Nux vomica. The improvement was rapid; in three weeks the urine was free from pus and bacteria, and acid in reaction. It may be argued

that the child was too young to say whether there was discomfort in passing urine or not; the following case, however, bears out what I believe, that pus can be present in the urine in variable quantities without any symptoms referable to the urinary passages.

B. M'G., girl, 5 years, complained of much the same train of symptoms as the previous case—loss of appetite—here there was loss of flesh; tongue moist, with thick fur at back; bowels constipated, temperature normal, heart sounds reduplicated and intermittent. I made no blood-count, but she looked anæmic, and her mucous membranes were pale. The girl complained of no pain or discomfort before or after micturition, and I could find no tenderness in any part of the urinary tract. The mother thought there was nothing wrong with the urine, but said she had to get up through the night and pass water, and this had been going on for a month.

On examining the urine I found it alkaline, of strong ammoniacal odour, and containing numerous pus cells, colon bacilli, a few yeast cells and other organisms, and a deposit of earthy phosphates.

This case I treated similarly to the previous one—a grey powder every third night, Quinine sulphate, Acid nit. hydroch. dil. and Nux vomica. This case was more obstinate than the previous one, as it was six weeks before all pus and bacteria had disappeared. These cases at first sight appear of minor significance, but they are illustrative of what I desire to prove, that the female urinary passages are more prone to the invasion of pus-forming organisms than the male. I have paid the same attention to the urine of male patients, and have seldom found pus where there were no symptoms referable to the urinary passages, except in cases of gonorrhœa and latent gonorrhœa. To discuss fully those cases illustrated would lead to a long theoretical discussion; so far, I have come to no satisfactory conclusion regarding the primary cause. Most

authorities, I believe, are agreed that when pus is present in the urine, the alkalinity or acidity is dependent on the micro-organisms present. If a urine is primarily normal, that is to say, contains no abnormal products, is of a certain specific gravity, and has a certain degree of acidity, one would not suppose this to be a suitable medium for the propagation of bacteria. If this supposition is correct, it is logical to infer that the chemical composition or the acidity of the urine has been altered in some way. I, unfortunately, am not sufficient of the chemist to say, but I should infer that the acidity was diminished by some alteration in tissue metabolism; there perhaps was not sufficient di-hydrogen phosphate secreted—on which the acidity of the urine is supposed to depend—and this diminished the acidity of the urine to such an extent that bacteria could live in this altered medium, gain a foothold, and produce a pathological condition of the bladder or some other part of the urinary tract. This may account for the cases just illustrated. These cases may have been primarily a dyspepsia, a name which covers a number of conditions I fear we know little about; certain articles of diet, or some toxin absorbed from the intestinal tract, may have affected in some way the chemical change of certain substances whereby acid is formed, which appears to be essential to keep the human urine aseptic. On the other hand, we know that the Micrococcus ureæ is capable of producing ammonia carbonate to such an extent that it renders the urine alkaline, but I have never found these organisms present in a healthy, freshly voided urine. As an analogy, I should like to instance the stomach. Do we ever find pathogenic organisms in the healthy stomach? I have never seen any account of this. In dilatation, on the other hand, when the coats are weakened, we get Sarcinæ, torulæ, and a host of other organisms. The antiseptic action (if I may use the term) of the organ is absent. We may get an acidity or hyperacidity, but what is this due to? Not to the natural HCl, but butyric, lactic acid, etc.

Similarly I think we may look at the bladder: diminish the antiseptic state of the urine, and we have an invasion of pathogenic organisms. It is, however, conceivable and logical to infer that, given a certain strength of attack by the enemy, and our fortifications will in the long-run yield to the invasion. Thus we may have either a bladder weakened by supplies being cut short from within, or by the strength of the besiegers. As an instance of the later, I will now illustrate leucorrhœa as a cause of pyuria.

It is outside the value of this paper to discuss the ætiology of leucorrhœa. This condition is, I fear, looked upon by the majority of women (and may I add practitioners?) as a natural antecedent or sequel to the menstrual flow; on this account it is misleading. It may be primarily in the majority of cases a slight excess of the natural vaginal secretion, and aseptic; but its channel is so close to a septic area, the anus, that it does not long remain an aseptic medium. When a leucorrhœa exists for any length of time it is a source of danger to its neighbour, the urethra. The following cases will illustrate this:—

CASE I.—Mrs M., age 30, complained of general *malaise*, shortness of breath, and palpitation on climbing stairs. She further complained of indefinite rigors, a feeling of coldfollowed by a feeling of heat, especially at night. Temperature subnormal; pulse irregular, 80 per minute. There was a systolic bruit at the apex of the heart, soft in character. Blood-count, 4,500,000 reds, 5600 white; lymphocytes were in excess of the polymorphs. Hæmoglobin index was normal; bowels were constipated. Menstruation was regular and natural, but she suffered from leucorrhœa a few days after menstruation. Some months the leucorrhœa was copious, requiring the use of diapers, and at times lasted for a fortnight. Urine was clear, natural colour, faintly alkaline reaction, and with a copious mucus-like deposit. The deposit contained a few pus cells, leucocytes, a large number

of squamous and pyriform cells, and rod-shaped bacteria. I refrained at this time from giving any urinary antiseptic; and it is interesting to note that after a fortnight the deposit increased in amount, she complained of pain and frequency of micturition, and there was tenderness over the bladder on palpation. Pus cells and bacteria had increased, the latter very markedly. My examination of this patient's urine extended over six months, and I found the pyuria fluctuated with the leucorrhœa. When the leucorrhœa was present pus cells and bacteria had increased, and *vice versa*. The urine was always examined after the patient had bathed the parts with perchloride lotion, and the first urine passed was discarded. I examined the leucorrhœal discharge and found bacilli similar to these in the urine.

Case II.—Mrs W., age 32. Before I saw this patient she had been treated for a chronic purulent vaginitis and endometritis. The case was treated by curetting and swabbing the uterus with phenol. After this treatment she felt better for a month, when the condition recurred. When the patient came under my care she complained of pain on coitus, severe pruritus of the vulva, and persistent leucorrhœa; she had no discomfort, but frequency of micturition. I examined the leucorrhœal discharge and found a few vaginal cells, pus cells, streptococci fairly numerous, and a few rod-shaped bacteria. The urine was withdrawn with a sterilised catheter after the vagina had been douched and the external genitals washed with perchloride lotion; the first urine passed was discarded. I found the urine contained pus cells, rod-shaped bacilli, cocci, but could not make out streptococci with certainty. This case I treated by injections of polyvalent antistreptococcic serum directly into the vagina. In all I made three injections, one every fourth day. Two days after each injection, douches of hot perchloride lotion were given. The patient experienced relief after the

first injection of the serum. Though I gave no urinary antiseptic, the urine cleared up as the leucorrhœa ceased. I treated this case in May of last year, and as the patient resided some distance from Edinburgh, I was sorry I could not watch her longer. Six months later she informed me that she had not been so well for years, though she still suffered from slight vaginal irritation. I have observed many other cases where pyuria and leucorrhœa coexisted, and though the pyuria is slight in the majority of cases, I have seen cases where the pyuria gave a great deal of trouble.

That pyuria is a cause of septic infection in the puerperium I have no doubt. I will illustrate this condition as I have done previously with two cases. The first case is one I attended six years ago while in the country, and which first brought this subject to my notice.

Case I.—Mrs K., multipara. I attended this patient during her pregnant condition for pain and frequency of micturition. In all she had three attacks, which were preceded by a slight rigor. The urine was acid, contained pus cells and numerous rod-shaped bacteria, but cleared up in a fortnight with little trouble. When attending her confinement, she said she never felt better. I diagnosed, by auscultation, L.O.A. presentation. I made no vaginal examination. The labour was natural and easy, and the placenta gave no trouble. Everything went well till the sixth day, when I found her temperature 99·4°, and discharge was foul-smelling. This condition went on for ten days, temperature ranging from 99°-100·4°, after which the discharge ceased and temperature remained normal. I examined the discharge and found pus cells, a few cocci, and numerous rod-shaped bacteria which I thought were colon bacilli. After the discharge ceased I examined the urine, and found pus cells and rod-shaped bacteria similar to those of the vaginal discharge.

CASE II.—Mrs McD., multipara. During this patient's pregnant state I treated her for a severe pyuria. I was not altogether certain of the seat, but the urine contained such large quantities of pus that I thought there must have been a rupture of an abscess into some part of the urinary tract. The condition cleared up under treatment, though the urine was still septic on the day of her confinement, 19th May. I took every antiseptic precaution at her confinement. The presentative was L.O.A., which I diagnosed by auscultation. Labour was easy and natural; placenta gave no trouble. Everything went well till the fourth day, when I found temperature 100·2°, discharge decreased and very foul-smelling. The temperature for eight days varied between 99° and 102°, then fell to normal. On the fourteenth day, though the temperature was normal, there was still a slight discharge, which was septic, but gradually disappeared under douching with perchloride. Examination of the urine showed pus cells, numerous bacilli coli, some diplococci, and other organisms. The principal organism present was the colon bacillus, which was corroborated by culture. The lochia also contained those organisms.

The detection of Pus in the Urine.—The tests for pus are numerous. When large quantities of pus are present, any of the well-known tests—caustic potash, guaiacum, etc., are equally good; but where small quantities are present I have found no examination reliable except by the microscope. Microscopically, I have found it impossible to say whether pus is present or not, *i.e.*, when it is present in small amount. The most reliable method I have found is to make a film by placing a drop of urine on a slide or cover-glass, allow it to dry in air or by heating gently over a spirit lamp, fix the film by passing two or three times rapidly through the flame, and add a drop of iodine mixture. The mixture I use is the one for testing the glycogenic reaction of blood, and is composed of—iodine, 1 grm.; iodide of potassium, 3 grms.; gum acacia, *q.s.*;

and distilled water, 100 c.c. The film is ready for examination in a few minutes. Pus cells appear reddish brown, other cells appear lemon yellow—a one-sixth inch lens is all that is necessary.

Bacteriology.—This I will briefly mention. From two of the cases illustrated I got pure cultures of the bacillus coli communis. I have obtained these bacilli from numerous cases of pyuria, and believe it plays an important part in causing pyuria in the female. In the case of septic vaginitis, streptococci were the infective organisms, and this I corroborated by culture. In other cases of pyuria I have found gonococci, staphylococci, pseudo-diphtheritic bacilli, and numerous other rod-shaped bacilli which at present I cannot place.

In conclusion, I should like to say that I have merely touched the fringe of this subject. It is so extensive that the possibilities are endless. The urines I examined, which formed the basis of this paper, were taken indiscriminately from my own and from some of my colleagues' patients. To assert that all these urines that contained pus were infected through the anus or vulvar passages would, of course, be a gross fallacy; how many were infected through the blood-stream I could not say, but I firmly believe that by far the greater number were infected directly from the anus or vulvar passages. In all cases where possible I tried to exclude other foci of bacterial contamination, by getting patients to wash the parts with perchloride lotion, and discarding the first urine passed, and in other cases withdrawing the urine by catheter. In the majority of cases, however, it was sent in the usual way. I do not wish to exaggerate, and should not like to diminish the importance of this subject, but would prefer you to draw your own conclusions from the outline I have given you.

My own conclusions are:—

I. That pyuria in its mildest form should be looked upon as a septic condition.

II. That leucorrhœa existing with a pyuria makes it highly probable that infection was from the vagina, and that leucorrhœa should be regarded as a septic condition.

III. That the urine of all pregnant women should be as carefully examined for pus as for albumen, etc., as a puerperal fever may be caused by infection from the urethra.

IV. That the presence of the colon bacillus in so many septic urines and in vaginal discharges makes the probability almost a certainty that infection was from the anus.

Lastly, I think in women a careful anal toilet is necessary.

The President thought that the practical conclusion was that in teaching nurses they should be told to cleanse the anterior part of the vulva first, then the vulva itself, and then the anus—from before backwards.

Dr Berry Hart considered that Dr Porter had taken up a very difficult subject. There was the strongest probability that, when urine was being passed, the pressure would force leucorrhœal discharge forwards, and so infect the urine. Catheter specimens would have been more reliable. The mere washing of the external parts was not sufficient. The paper was interesting, and represented a large amount of work.

Dr James Ritchie said he always had a certain fear of passing a catheter. He preferred to have the external parts washed and the vagina plugged before the urine was passed. He was struck with the large number of cases of bacteriuria, even in young women who never had had a catheter passed. In many there was pus and the bacillus coli frequently found. The source of infection was probably the rectum. In the pyelitis of children the infection was through the blood-stream. The constipated fæces caused lacerations of the anus, and so the germs passed into the blood from the fæces. He did not think that leucorrhœa was always caused by a septic condition, but was often due to debility or local injury. The ordinary

vaginal secretion had a certain protective power against germs. The paper was one of very great interest, and opened up quite a number of questions for further research.

Dr F. Porter thanked the Fellows for their kind criticisms. He considered it would have been better to get catheter urine for the bacteriological part of the subject, but it was not essential when dealing only with pus. In obstetrical cases, as long as pus was present in the urine infection existed, and a puerperal fever (*peritonitis*) might occur at any time. It was necessary to take this subject into consideration especially in obstetrical cases. He did not think they could have the bacillus coli present in a healthy urine; the urine must be altered in some way first. He considered they must look upon pyuria, however slight, as a septic condition.

MEETING IV.—FEBRUARY 14, 1906.

DR J. W. BALLANTYNE, *President, in the Chair.*

I. The following gentlemen were elected Ordinary Fellows of the Society:—James Lawson Russell, M.B., Ch.B., West Lodge, Todmorden, Lancashire; A. J. M'Kendrick, L.R.C.P. & S.E.; Alexander Scott, M.B., C.M., Broxburn; A. Simpson, M.B., Ch.B., Royal Maternity Hospital, Edinburgh.

II. *Dr Wood* showed AN ANENCEPHALIC FŒTUS, seven months, where there was a distinct history of syphilis. The mother had had three children. The first was now three and a half years of age, and had a very large head, the measurements of all the different circumferences being very considerably above the average; the nose was flattened at the bridge, and the eyes prominent and wide apart. The second child died three weeks after birth, from syphilis and gonorrhœal conjunctivitis.

III. *Dr Haultain* showed—(*a*) A THIN-WALLED CYSTIC UTERINE TUMOUR removed by abdominal hysterectomy. The cystic part of a tumour was a degeneration of a fibro-myoma. One half was filled with a peculiar gelatinous substance, and the other half with a large blood-clot, evidently due to a hæmorrhage into a thin-walled cyst. Another nodule in the tumour was also degenerated. (*b*) A SUBPERITONEAL CERVICAL FIBROID removed for pressure on the bladder. On opening the uterus a small nodule was found under the mucosa, and microscopic examination showed it to be tuberculous. The woman was 50, and had been in perfect health. The presence of a primary nodule of tubercle in that situation was well worth noting. The tubes showed no disease. (*c*) A UTERUS AND TUBES WITH A TUBAL GESTATION. The opposite tube revealed, on examination, a complete decidual formation in the mucosa. There was no corpus luteum on that side, and the tube was otherwise normal. The presence of a decidua in the opposite tube was a question of controversy. Many denied its presence, *e.g.*, Bland Sutton; Webster believed it to be partial; but he (Dr Haultain) had made serial sections in the tube, and found the decidua to be complete. There was a decidual formation from end to end, and there was a layer of cubical epithelium covering it. (*d*) A POLYPUS removed from a patient who had given birth to twins seven weeks previously. On microscopic examination young villi covered by Langhans layer and a syncitium were found throughout the mass. Calcareous deposit was also present. It probably represented a third embyro, which had early become blighted. (*e*) TUBES AND OVARIES removed for double pyosalpinx, with ovarian abscess. The only symptom was profuse uterine bleeding, which had gone on for three months.

IV. *Dr J. W. Ballantyne* (*President*) showed AN ANENCEPHALIC FŒTUS. The history of the case pointed to syphilis. In

these cases the spirocheta pallida might be looked for in the placenta. It was a female child.

V. *Dr Freeland Barbour* showed A FIBRO-MYOMA OF THE UTERUS AND AN OVARIAN CYST occurring together. The tumour extended up to the liver, to which it was united by adhesions; no symptoms were present until recently, when she had abdominal pain located over the tumour. A souffle was present. The ovarian cyst lay on the top of the fibroid, and was so closely attached to it that in separating the cyst from the fibroid a part of the uterus was cut through. The fibroid grew from the cervix. It was soft, and contained many vessels, some of which contained thrombi, but there was no necrobiotic change.

VI. A PLEA FOR OPERATIVE INTERFERENCE IN INTRACRANIAL HÆMORRHAGES IN THE NEW-BORN.

By E. Scott Carmichael, F.R.C.S.E., Assistant-Surgeon, Royal Hospital for Sick Children.

Among the large number of children which present themselves at the out-patient department of a children's hospital, none offer a more distressing picture than those which are the subjects of cerebral palsy. The group of signs and symptoms which characterise the disease, first throughly described by Little in the middle of last century, are well enough known, and do not require any description in a paper such as this. The treatment of Little's disease is one of the most unsatisfactory to the physician; and to the surgeon who is called in to remedy the deformities resulting from it, the results obtained cannot be said to be in the least gratifying.

Division of muscles and arthrodesis of joints, though they improve the general appearance of the limbs and of the patient

slightly, and in many cases not at all, make his condition little better than that of the general paralytic.

When so little can be done for the pathological conditions thus throughly established, one naturally looks to the most satisfactory method of combating them, by interfering at an earlier date and inquiring into the actual causation.

Without entering into the various causes of cerebral palsy, of whatever degree it may be, whether diplegia, hemiplegia, monoplegia, or paraplegia, most neurologists are agreed that a large group of these cases are traumatic in origin.

The first to draw attention to this group was Little, and it is to him and Sarah M'Nutt, who repeatedly demonstrated the nature of the lesion in these cases, that we owe our knowledge of its pathology.

Though Little published several papers calling attention to their probable traumatic origin, he offered very few pathological data in support of his views, and it was only the pathological investigations of M'Nutt, some twenty years later, on children who had been still-born or had died shortly after birth, which drew attention to the common occurrence of intracranial hæmorrhage and its association with the clinical symptoms described by Little.

It has been frequently demonstrated that the hæmorrhage in these cases is meningeal in origin. It may occur on the surface of the brain or at its base. When on the surface, it is generally bilateral, and is most considerable over the central region and towards the middle line.

Hæmorrhage at the base is generally in the posterior fossa, beneath the tentorium cerebelli, surrounding the pons and medulla.

According to M'Nutt, basal hæmorrhages are more liable to occur in vertex presentations, while intense extravasations over the cerebral hemispheres occur in breech cases.

When the hæmorrhage is at the base, most of the children

die at or immediately after birth, while the cortical hæmorrhages, according to their extent, give rise, in those children who survive, to the varying degrees of spastic paralysis seen in the wards of a children's hospital.

The thickest part of the extravasation is generally in the motor region, over both cerebral hemispheres, which explains the frequent bilateral character of the condition. The frequency with which the legs are involved is no doubt due to the presence of the leg centres near or at the middle line, where the extravasation is most marked. When the extravasation extends beyond the motor areas, general cerebration is affected from slight degrees of feeble-mindedness to complete amentia. Many of these cases come to the surgeon for relief of convulsions and epileptic fits, as late evidences of the changes resulting in the cerebral cortex from an earlier hæmorrhage.

The hopelessness of after-treatment in these cases naturally leads one to think whether something cannot be done to prevent the havoc caused by these cortical hæmorrhages.

It is therefore to the obstetrician that we must turn for help, as it is he alone who can recognise the condition at a time when treatment is most likely to be efficacious.

Before, however, considering the treatment, one inquires first into the conditions in the mother and child which are most liable to predispose to these intracranial hæmorrhages.

I had the opportunity some time ago of witnessing a case, the symptoms and signs of which impressed me greatly at the time, and which have been vividly brought to my mind again by a recent paper of Cushing's on the intracranial hæmorrhages of the new-born.

It was that of an elderly primipara, a strong, healthy woman, about thirty-nine years of age. The presentation was normal, vertex, of first position. The pelvic measurements were those of a justo-major pelvis.

As far as could be reckoned, however, the patient had gone beyond her time, and the fœtal head was large and well ossified.

The second stage was tedious, forceps being applied owing to the irregularity of the fœtal heart sounds. The child was born considerably asphyxiated. There was marked cyanosis, but the child was otherwise healthy, there being slight bruising over the parietal regions from the forceps. It recovered in about half an hour, but remained somewhat cyanosed for the first two days, after which it apparently recovered. On the fifth day it had a convulsion, commencing as far as could be made out from the nurse, in the right lower limb, but rapidly becoming general. On the sixth day it was seized with a series of convulsions lasting for two or three hours, and on the seventh day a further series of fits, lasting intermittently for about four hours, led to its death at the end of that time.

On looking back upon this case, I cannot help thinking that there had been a considerable meningeal hæmorrhage. The fontanelle was bulging and the eyes somewhat prominent, the child always having a somewhat dusky, cyanotic appearance.

According to Gowers the presentation in about one-fifth of the cases is unnatural, the head being born last, but the same symptoms follow head presentations. Half the cases are first-born children, and in other cases the labour has usually been difficult. Although in many cases forceps are used, the lesion cannot be looked upon as caused by the use of the instrument, but rather from the conditions that make it necessary. Gowers records one case in which the clumsy use of the forceps indented the skull over the arm centre of the opposite limb, which was chiefly affected, but he draws attention to the fact that the lesion is not as a rule due to instrumental aid, a point that should be noted to safeguard against reflections being cast upon the obstetrician.

Some cases appear also to occur as the result of precipitate labour, from the rapid birth of a soft and easily compressible skull.

The affection is somewhat more common in boys than in girls.

Through the kindness of the physicians of the Children's Hospital, I have been able to examine some of the records of cases under their charge, as well as those appearing in the Surgical Out-patient Department.

Of fourteen cases of cerebral palsy of evident traumatic origin, at least where a history of dystocia was present, ten occurred in males, ten were first-born children. As far as could be made out from the history, the presentation was vertex in eleven cases, breech in one, and transverse in two cases.

In all the cases except two, the labour was described as long and tedious, in one case extending over four days, instruments being used in four cases, while in three cases no doctor was present, the patients being attended by a midwife.

Two of the children were born prematurely, but in both there was marked asphyxia, the children being described as "quite black" and "purple."

Distinct injury to the head was only noticed in one case, while marked cyanosis was present in eight of the cases, and lasted for a varying time from a few hours to several days.

In ten of the cases the resulting paralysis was a diplegia, with in one case almost complete idiocy. These then present the worst class of cases that are met with in hospital or private practice, but there are many others of milder form seen from time to time in an out-patient department.

It would appear, therefore, that the conditions which most favour these intracranial hæmorrhages are those in the mother giving rise to tedious labour not necessarily requiring instrumental interference. Prolonged cranial compression probably

in many cases is a common cause, but the most frequent exciting cause is asphyxia. In the child the presentation which shows the greatest number of cases of hæmorrhage is the vertex, although it seems probable that its relative frequency is more common in breech or transverse cases.

Upon this point, however, there is very little record, and until systematic examination of the skull is made in fœtuses which have died during parturition, our knowledge of the situation of these hæmorrhages and their causation must remain very insufficient, and I hope, in bringing forward this subject to-night, that those who have access to extensive hospital and private obstetric practice may be led to investigate the cause of death more frequently in fœtuses which are still-born.

It is important, therefore, to consider the symptoms which betray a hæmorrhage, in those cases which survive parturition.

First, there is the history of a protracted or difficult labour. When born, the child presents more or less marked signs of asphyxia; owing to the general condition of the child, paralytic symptoms are often not noticed at first. In most cases nothing is noticed in the condition of the child during the first few days of life, but in a few there is evident difficulty in swallowing. One arm or leg is not moved; sometimes none of the limbs are moved; but this attracts less attention than a one-sided immobility. Another frequent symptom is convulsion, general or unilateral, and often accompanied by persistent rigidity of the limbs and inversion of the thumbs. The convulsions, when not fatal, usually cease a week or two after birth.

A most important sign is a bulging of the anterior fontanelle, which is often firm and non-pulsating. Œdema of the eyelids and proptosis is recorded in one of Cushing's cases (Case 3), while subconjunctival and palpebral hæmorrhages denoted the possibility of accompanying sinus thrombosis. In this case, blood-clots were removed from both cerebral hemispheres, the child recovering completely from the operation.

The hæmorrhage in these cases is usually of venous origin, arising from the small veins of the cerebral cortex which run into the superior longitudinal sinus. If one examines these vessels anatomically, one finds that they run from the sulci across the interval of the superior longitudinal fissure, and open into the sinus in a direction against the blood-stream. Cushing believes that they are apt to burst from backward pressure where they are least supported, namely in the fissure.

I have examined in two post-mortem subjects recently the veins opening into the sinus. Many small veins enter at numerous points from its origin at the glabella to its termination at the torcular Herophyli, but there are two or three vessels of larger size which pass from the region of the Rolandic area to the sinus, from the rupture of which considerable extravasation would take place.

Clinical symptoms support the anatomical arrangement as to the probable source of these hæmorrhages, and when one considers the degree of overriding of the parietal bones especially, and the general moulding of the skull which takes place during labour, there must, even under normal circumstances, be considerable interference with the blood-flow through the sinus and its feeding vessels.

Cushing believes that rupture of these vessels is most frequent on one side, but most neurologists seem to agree that diplegia is the most common form of traumatic cerebral palsy.

What, then, is to be the line of treatment in cases presenting such symptoms.

Whenever there is the least doubt, it is advisable to perform lumbar puncture, as recommended by Cushing, who points out that in the adult meningeal hæmorrhage in the brain can often be detected by the presence of blood in the cerebro-spinal fluid removed by such means.

Cushing has operated on four cases which presented characteristic symptoms, in all of which extensive subdural hæmor-

rhages were present, and where the general condition of the child was critical.

Two of these recovered from the operation, and immediately began to improve. The more remote results are obviously difficult to estimate.

The operation consists in an osteoplastic resection of the skull to expose a large portion of one or both cerebral hemispheres, the washing away of all extravasated blood from the cerebral cortex, and the replacement of the osseous and soft tissues flap.

Children bear operations on the skull relatively extremely well as compared with the adult, the operation itself taking a much shorter period of time, and being associated with comparatively little shock, which might be expected when one considers the amount of traumatism every child is exposed to during labour.

Provided every care is taken to prevent loss of blood, therefore, the risk of such an operation itself is not nearly so great as might be at first anticipated.

In conclusion, gentlemen, the points which I should like to lay stress upon in considering this subject are:—

1. The importance of examining the skull and its contents in all dead-born children, and in those which die shortly after birth with symptoms of asphyxia.

2. Asphyxia is more commonly the exciting cause of hæmorrhage, injury from application of forceps forming a very poor second as regards its etiology.

3. The advisability of lumbar puncture in all cases of severe asphyxia, especially if associated with increased intracranial pressure, as evidenced by a bulging anterior fontanelle.

4. The importance of early operation in all cases where symptoms persist for a few days, especially when fits and signs of focal pressure are present.

[Since this paper was read an examination of the skulls and

cranial contents in six fœtuses and young infants has afforded me the opportunity of investigating more particularly the anatomical conditions bearing on this subject.

The superior longitudinal sinus from its origin at the ethmoid bone to the torcular Herophyli receives from 10-12 veins, from the superior cerebral surface, on each side. A number varying from 4-6 of these are large in size. With one or two exceptions these larger vessels enter the sinus under cover of the parietal bone, but more especially at its anterior and posterior border close to the coronal and lambdoidal sutures. They are usually larger in the region of the coronal suture.

The presence of these large vessels close to these cranial sutures suggests the possibility of their injury in the displacement and overlapping of the cranial bones during parturition.

According to Cunningham and Horsley, the fissure of Rolando and Rolandic areas are situated nearer to the coronal suture in intra-uterine and early extra-uterine life than in later life, so that any lesion of these vessels will rapidly affect these areas.

Another factor which may have a possible bearing on the ætiology of these hæmorrhages was shown in two of the skulls examined.

In one, a somewhat hydrocephalic skull, the superior longitudinal sinus was not situated mesially, but from the anterior aspect of the anterior fontanelle passed under the right parietal bone about one-eighth of a inch from the sagittal suture, so that the superior cerebral veins of the left side crossed the suture unsupported in order to reach the sinus. Any overriding of the one parietal bone upon the other would seem to nip the vessels as they crossed the sagittal suture.

This condition was also shown to a lesser extent in another skull.

The anatomical arrangement of the superior cerebral veins and their relationship to the superior longitudinal sinus and the coronal and sagittal sutures seem to favour their injury not

only from cranial compression, but also from increased intracranial venous pressure in asphyxia.]

Dr A. H. F. Barbour thought that the paper was interesting, but there was difficulty in regard to its practical application. Sometimes symptoms occurred which were not due to hæmorrhage. He recalled two cases, one of which might have been treated by operative means. In one the child had a large head, and was probably injured during labour. It was born asphyxiated, and brought round in half an hour by artificial respiration. General weakness developed afterwards. In the second case the child died with distinct symptoms of hemiplegia, which came on a few days after birth; no hæmorrhage or gross lesion was found on post-mortem examination. It was an interesting point whether the hæmorrhages were due to asphyxia and not to injury. He (Mr Carmichael) had raised an important point in regard to examining carefully the heads of all children who died during labour or shortly after it.

The President referred to the literature of the subject, instancing Dr M'Nutt's paper and that by Dr Jennings of New York, which he (the President) had communicated some years ago to the Society. Prof. Osler had also written on the subject (in *Teratologia*), and then came Cushing's two papers. He (the President) considered it was not quite clear how a diagnosis of cerebral hæmorrhage could be made from spinal tapping; for spinal injury was not thus excluded. An interesting point was that some cases were due to antenatal (not intranatal) causes. Prof. Osler had proved this by a case in which a woman died when seven months pregnant from typhoid; the fœtus was extracted after her death, and a large hæmorrhage was found in the brain, in the centrum ovale. In this instance of course there could have been no pressure on the head. It was not known if the child had typhoid; it was before the days of the Widal reaction. The whole matter came to the practical

issue that they must try to modify their methods of resuscitating the child in asphyxia. Holding up by the heels, and even Schultze's swinging, were not always and in all cases the best methods of treatment. They ought to find out in each case the cause of the asphyxia. There ought to be more examinations of dead-born children to find out the cause of still-birth.

Mr Carmichael thanked the Society for receiving the paper. The number of cases showed that relatively more occurred in breech and transverse cases. That point might be more thoroughly investigated. Many cases of convulsions were due to acute infective encephalitis, and it was extremely difficult to distinguish it from hæmorrhage. Many supposed infective cases were, according to Cushing, traumatic in origin. They wanted further pathological evidence on the subject. Cushing diagnosed the condition by lumbar puncture. If he found red blood corpuscles in the fluid, hæmorrhage was present. Any method of resuscitation had very little effect on the hæmorrhage.

VII. NOTE ON A CASE OF PREGNANCY IN A BICORNUATE UTERUS.

By W. FORDYCE, M.A., M.D., F.R.C.P.E., Assistant Gynæcologist, Leith Hospital.

THE following case of pregnancy in a malformed uterus is, I think, of sufficient interest to put on record.

The history is briefly as follows:—

I was asked to see the patient, Mrs B., æt. 28, with a view to the removal of a polypus which was projecting from the dilated cervical canal, and which had caused a severe flooding early in February of this year. She had been married for three years. Previous to marriage she had enjoyed perfect health, menstruating rather freely five to six days each month without pain.

Fifteen months after marriage she had a flooding instead of the ordinary monthly period, and this was followed by a three months' abortion. The patient did not know she was pregnant, as she had not ceased to menstruate. She made a good recovery, and continued again to menstruate regularly till February of this year, when she had another severe flooding, which rendered her very anæmic. The bleeding lasted for a week, and several large clots were passed. Menstruation had been normal in the months of November and January, but was rather scanty in December. Her own doctor, on examination, found the uterus enlarged and a polypus protruding from the external os, and, in view of her previous history, thought at first she might be pregnant.

I saw the patient for the first time three days after the bleeding had stopped. She was very anæmic, but then complained only of a thick yellowish discharge, and from weakness, the result of the severe flooding. On vaginal examination, there was a soft polypoidal mass, about the thickness of a man's thumb, projecting through the external os well into the vagina. The finger could be passed up into the cervical canal, but not high enough up to reach the base of attachment of the polypus. The uterus was lying to the left side and felt slightly enlarged. To the right side, and closely attached to what I supposed to be the normal uterus containing the polypus, was a well-defined globular swelling, about the size of a closed fist. The tumour was not fluctuating, but of a doughy consistence. I thought at first I had to deal with an extra-uterine gestation, but as there was no history of pain or amenorrhœa, I diagnosed the swelling as a soft fibroid, and thought that the polypus was probably part of the main tumour mass.

The patient came to Edinburgh to be under my care, and I intended, before removing the polypus, to make a more thorough examination under chloroform than was possible without it. Within thirty-six hours of her arrival, however, she was seized

with severe pain in the lower abdomen, and expelled entire a three and a half months' ovum. I feared I must have mistaken the lower end of a partially extended ovum for a polypus, but on vaginal examination, after the abortion, the polypus was still protruding, though not to the same extent as formerly.

Three days later I decided to remove the polypus, and think I made a mistake in delaying so long, as by this time it was retracted well within the uterus and the external os was closed. Dilatation of the cervix, however, was easy, and I could feel the polypus attached high up in the uterus, which lay to the right side. Its removal was difficult, owing to its friability, and was only accomplished piecemeal. I had finished this operation and was palpating the uterus bimanually, when I found a hard, firm swelling on the right side. On introducing my finger into the cervix, I found it passed up into this body, which was hollow and contained a small piece of placenta, which I removed.

I then realised for the first time the exact nature of the case, and made out very clearly that I was dealing with a uterus bicornis unicollis; that the ovum had been situated in the right horn and formed the boggy swelling in the right side, and that what I had previously thought to be the whole uterus containing the polypus was the left horn.

The bifurcation extended well down to almost the internal os, and ten days after the abortion the two lobes could be quite easily made out. Microscopic examination of the polypus shows it to be composed entirely of decidual tissue. That the general mucous membrane of the non-pregnant horn should form a decidua was to be expected, but I am unaware of a decidual formation having been noted before in a mucous or fibro-mucous polypus of the pregnant uterus. This is one point of interest in the case. The others are: the menstrual history in the patient's two pregnancies, and their premature termination at the third month in each case.

Menstruation in cases of bicornuate uteri, as in uterus

didelphys, where the division is complete down to the external os, presents several variations. Menstruation may occur simultaneously from both horns, when the flow is apt to be excessive. Each horn may menstruate regularly every four weeks, but at different periods, and so a form of metrorrhagia results, as in cases recorded by Hill and Lamond Lackie, etc.; or the horns may alternately menstruate, and so the menstrual type be normal. One horn may be so rudimentary as not to have any menstruation, and when both are poorly developed, menstruation is scanty, irregular, and painful.

Should pregnancy occur, one horn may continue to menstruate, as seems to have taken place in the case I have just recorded, though, as I have said, a decidual membrane seems to have formed in the non-pregnant horn, and this being so, menstruation, it was to be expected, would have been in abeyance.

Abortions are frequent, but in the majority of the recorded cases no interference with the course of pregnancy has occurred. In my case the presence of the polypus makes any comparison or deduction as to the cause of the abortion valueless.

Labour, as a rule, is normal. Sometimes, however, the hypertrophied non-pregnant horn has been pushed down into the pelvis, and given rise to serious dystocia. Nagel records three such cases, and in Wöhlein's and Bettman's cases the non-pregnant horn obstructing the pelvic cavity was the cause of the uterus rupturing during labour.

Difficulty and delay may also arise from lack of muscular force in the pregnant horn; failure of the cervix, which is often rudimentary, to dilate; abnormal presentation, which is very frequent; and from the oblique position of the pregnant horn preventing the expulsive forces from being directed in the axis of the pelvis.

Pregnancy in a rudimentary horn, which communicates with the cervix by a very small opening, or does not communicate at all with the rest of the uterus, ends generally in rupture. This

class of case, however, is in a different category from the one I have described.

Dr Barbour remarked that the paper did not lend itself to discussion, but the case was extremely interesting. They did not often meet with such cases. He had only seen one himself, of a septate uterus without any indication of its double character, on bimanual or vaginal examination.

The President remarked that the Society was glad to hear Dr Fordyce's very interesting case-record. They often read of bicornuate (bicornute) uterus, but seldom met with it in practice. It sometimes accounted for the occurrence of hæmorrhages during pregnancy which were otherwise difficult to explain.

MEETING V.—MARCH 14, 1906.

Dr J. W. BALLANTYNE, *President, in the Chair.*

I. The following gentleman was elected an Ordinary Fellow of the Society:—H. N. Anklesaria, L.R.C.P. & S.E., 5 Roseneath Street, Edinburgh.

II. *Dr Brewis* showed—(*a*) LEFT OVARY removed for encephaloid cancer. Christina D., aged 42, had been losing weight for a year, had occasional abdominal pain, and for the last three months swelling of the abdomen. Periods had been rather less profuse than formerly. After 300 ounces of brownish blood-stained fluid had been removed by Dr Gibson by tapping, Dr Brewis made out a large tumour growing from the left side of the pelvis, and extending up into the abdomen. The abdomen was opened and the free fluid allowed to escape slowly. The tumour, which was not adherent, was easily removed. It was

solid, and of ovarian origin. The right ovary seemed quite healthy, and was left *in situ*. The patient made an excellent recovery after she got over the shock of the operation. Mr Muir reported the microscopic appearance to be typical of a soft carcinoma encephaloid. The stroma was typical of the growth, which contained blood-vessels, was cellular, and in parts well developed, and formed numerous alveoli of various sizes, which were filled with epithelial cells. Many of the cells were in mitosis, in parts many polymorphonuclear leucocytes were seen amongst the epithelial cells. There was not much degeneration of the growth, although in parts one could see many of the cells showing degenerative changes of the nuclei. Only at the surface of the section could any ovarian tissue be seen, and it was pushed aside by the growth forming a sort of capsule.

(*b*) UTERUS removed by Porro-Cæsarean section for inoperable cancer of the cervix. Mrs N., aged 39, had had eight children and one miscarriage. For the last eighteen months she had irregular hæmorrhages, and sometimes almost constant red discharge. She had never missed a period. For the last two months the discharge had been noticed to have a bad odour. There had been pain low down in the back and radiating down the left leg. Five weeks before admission patient felt "life," and until that time had had no idea that she was pregnant: there had been no morning sickness, no suppression of the menses, no enlargement of the breasts. The abdomen was prominent, the tumour reaching almost to the umbilicus. The fœtal heart had been heard. Dr Brewis did a Porro-Cæsarean section and removed the uterus supravaginally, after having taken the child through the uterine opening. The child was not viable. The disease had infiltrated the left broad ligament, and the tissues were very friable. The patient made a good recovery, and when she left the Home there was no apparent extension of the disease.

(*c*) OVARY WITH SMALL DERMOID, removed by ovariotomy. The patient, Mrs B., aged 34, three children, had complained of pain

in the left side and dragging feeling; menstruation had been regular, with pain before the periods. The left ovary was so slightly enlarged that Dr Brewis hesitated to remove it. On section the tumour was found to be a small dermoid. (*d*) PAPILLARY GRAAFIAN FOLLICLE CYST. The patient, Mrs P., aged 30, married four years, had had no family. Seven years ago she felt pain and dragging in the right side, and only two months ago had noticed a swelling in the right side. The pain had been much less since the swelling formed. Menstruation had been regular, with some pain before the periods. A right-sided ovarian cyst was removed about the size of an orange; it was not adherent, so was easily removed. It contained clear straw-coloured fluid, and its wall was studded with small papillæ. The left ovary was left *in situ* as healthy. (*e*) LARGE CERVICAL FIBROID OF UTERUS filling the pelvis and causing retention of urine, removed by panhysterectomy, from patient aged 49. Operation of panhysterectomy was performed; it was one of great difficulty, and had to be conducted with great care, on account of the displacement of the right ureter. The position of the ureter was recognised, and the broad ligament on that side was divided before ligation. The oozing was considerable, and necessitated ligature of the right internal iliac artery. The specimen showed the body of the uterus to be only slightly enlarged, the great mass being composed of the cervix, the cervical portion measuring 7½ inches longitudinally. The posterior lip of the cervix projected downwards fully 2 inches further than the margin of the anterior lip. The latter was stretched transversely in an oblique direction, and measured 3¾ inches from side to side. On section, the tumour was seen to be growing in the posterior wall of the cervix, the body of the uterus riding on the top.

III. *Dr Haultain* showed (*a*)—A WELL-MARKED EXAMPLE OF PREGNANCY COMPLICATED WITH FIBROIDS. Patient was 30, and

not long married. A large fibroid nodule was present in the pelvis, blocking it completely. A large nodule was felt on the left side, and a third on the top of the uterus. Hysterectomy was advised, but as she wished to have a child the gestation was allowed to go on, the patient being carefully watched. At the fifth month she was seized with severe abdominal pain, and immediate operation was recommended and performed. The onset of pain was interesting in view of the fact that one of the nodules showed commencing "necrobiosis." That was a bad term, as the condition was nothing else than a red infarction due to interference with the blood supply. The pelvic nodule was very adherent, and difficult to remove. The disposition of the tumours was such that labour could never have taken place. The patient was practically well since operation. (*b*) FIBROID UTERUS removed from a patient of 55. Menopause seven years ago. She suffered from post-climacteric hæmorrhage. In the cavity of the uterus was a necrotic mass which was evidently the cause of the bleeding. On microscopic examination the condition was found to be a round-celled sarcoma. The association of fibroids with sarcoma was very rare. A panhysterectomy was performed.

IV. *Dr Haig Ferguson* showed—(*a*) AN OBSTETRIC AND GYNÆCOLOGICAL BAG with steriliser. The bag had a false bottom, which contained the steriliser. The bottom compartment was made of aluminium. The steriliser was large enough to hold all the necessary instruments. It was not expensive, he understood—the price not being more than that of an ordinary bag and an ordinary steriliser. (*b*) PUERPERAL UTERUS removed by hysterectomy, with multiple abscesses in walls. (*c*) HYDATID MOLE which had been retained *in utero* about ten months. It was a first pregnancy and the uterus grew rapidly, being the size of a seventh month's pregnancy at the fifth month. Then it shrank, and a cystic mass was removed later.

V. ABDOMINAL HYSTERECTOMY FOR ACUTE PUERPERAL METRITIS AND ACUTE SALPINGITIS, WITH RECORD OF A SUCCESSFUL CASE.

By J. Haig Ferguson, M.D., F.R.C.P.Ed., F.R.C.S.Ed., F.R.S.E., Lecturer on Midwifery and Gynæcology, Edinburgh; Gynæcologist, Leith Hospital; Assistant Gynæcologist, Royal Infirmary, Edinburgh, etc.

The question of operative interference in puerperal infection is a very difficult one in many instances, and at the same time it is one of the highest importance. It is indeed comparatively seldom that one would be justified in performing hysterectomy in such cases, and yet there are occasions, as in the one I am about to record, where life can be saved by the procedure. Schultze, in 1886, laid down definite indications for hysterectomy in puerperal fever, as follows:—(1) There must be present in the uterus an active source of infection which cannot be successfully dealt with through the genital canal; (2) there must be no imminent source of infection elsewhere than in the uterus; and (3) the existence of foci of septic infection, such as thromboses or emboli, already deposited more centrally, should be improbable. In other words, as Fehling has pointed out, one must clearly distinguish between sapræmia or intoxication, and general infection, in considering the question of hysterectomy.

In general septicæmia the mere removal of the uterus alone can do no good unless in exceptional cases, as where there is coexisting uterine phlebitis, where hysterectomy might be combined with ligature or excision of the thrombosed veins in the broad ligaments, and possibly also the hypogastric veins. On the other hand, in the comparatively rare cases where the focus of infection is limited to the uterus, and where such foci are not otherwise accessible, the indications for hysterectomy are clear, for instance in sloughing and suppurating fibromata, in

uterine abscess (which can never be diagnosed with certainty before operation), in the very rare cases where decomposing placental tissue cannot be completely removed *per vaginam*, and also in cases where a septic uterus has been perforated by a curette, or in criminal abortion.

Of course, one may say that in practically all cases of infection which are seen sufficiently early, the focus is confined to the uterus, but one could never go the length of suggesting that therefore all such uteri should be removed at once. If this were conceded, many (if not most) such uteri would undoubtedly be removed unnecessarily, as with prompt medical treatment and less severe local measures, about 90 per cent. of such cases should recover. On general principles, of course, it might be argued that so far as hysterectomy is concerned, the earlier it was done the better its chance of success, not only because the focus was more likely to be limited, but the patient's strength would not be too greatly exhausted by continued fever and septic poisoning.

There can be no doubt that the best results all round are got, not from operating early (unless in exceptional cases with special indications), but by operating only after all other treatment has failed or is failing.

In those very acute cases of poisoning which die in a few days (happily rare now), probably nothing that could be attempted could possibly save them, as, in addition to the virulence of the poison, some important organs, such as the liver, kidneys, brain, or heart, are probably seriously implicated almost at once.

Unfortunately, neither examination of the blood nor of the secretions from the uterus can give certain information as to whether hysterectomy is indicated or not. We must base our decision more on the general condition of the patient, on careful local examination, and on the fact of no benefit arising from the ordinary routine treatment. Possibly a final decision cannot be

arrived at till after the abdomen has been opened. Of course one can get much valuable help from a leucocyte count and the glycogenic reaction, diagnostic aids which were fully dealt with in an interesting paper by Mr Scott Carmichael, read before this Society in November 1903. In the discussion which followed this paper, Dr Gulland pointed out that when there was general septicæmia and a low leucocyte count, it meant that the patient was overwhelmed, and in such a case it was inviting disaster to operate. In localised suppuration it was usual to find the reverse, namely, a high leucocyte count, a high polymorphonuclear range, and marked glycogenic reaction. Grandin has pointed out that in his experience an empty uterus with a low temperature, and a rapid pulse that is out of proportion to the thermic rise, suggests streptococcus infection as in the ascendant; whilst the presence of fetid discharge, the finding of remnants of necrosed secundines in the uterus, together with high pulse and temperature, suggest the prevalence of the sapræmic type of infection,—this latter condition being more an indication for hysterectomy if other treatment has failed.

Vineberg believes that 95 per cent. of cases of puerperal sepis nowadays met with, where the original infection is in the uterus, can be cured by curettage, drainage, and irrigations. He points out that Bumm's granulation zone only exists in simple cases where the septic intoxication is localised in the uterus, and that it is not present in cases of general sepsis. In the remaining 5 per cent., such treatment will fail, the symptoms will persist, and consequently an exploratory laparotomy is indicated; the further course to be guided by the lesions found. He finds that in such cases total hysterectomy will generally be necessary.

In this connection I would here mention that personally I prefer the finger to using a curette in a puerperal uterus.

In general peritonitis, on the other hand, the indications are for opening the abdomen, thoroughly searching for all foci of

suppuration, and draining the cavity through the vagina. I strongly feel that this procedure, if more universally adopted, would yield good results in many apparently hopeless cases. Of course hysterectomy can be done at the same time if the uterus shows evidence of being a focus of infection. The vaginal route is to my mind indicated only where there is a distinct localised and fixed pelvic abscess to deal with, and where, therefore, it is a simple matter to evacuate the pus and drain through the vaginal roof. One may drain the abscess abdominally also. In all other cases the abdominal route should be the one of selection, as enabling the operator to judge clearly of the condition, and rationally to cope with any foci of infection which may present themselves. Subsequent washing out and drainage should be carried out through an opening made into the vagina through Douglas's pouch.

The friability of the puerperal uterus renders vaginal hysterectomy in such circumstances extremely difficult, and therefore it should not be undertaken.

The mortality in maternity hospitals in pronounced puerperal sepsis, according to Ricard, is somewhere about 10 per cent., with ordinary routine treatment. In Dresden the mortality from puerperal sepsis in the Frauenklinik is said to be 50 per cent. The apparent disparity in these statistics appears to me to be due to indefiniteness and confusion as to what really constitutes puerperal sepsis. In all likelihood half of this 10 per cent. mortality could be prevented by surgical interference, either by drainage or hysterectomy, as, so far as one can judge from recorded cases, fully 50 per cent. of the cases of puerperal infection operated on recover, and these are probably the very worst and most severe cases, all of which would have died under ordinary routine treatment.

Apart from mortality, morbidity would probably be greatly lessened by timeous surgical intervention in suitable cases.

What I would plead for is that in all cases of puerperal

infection which have resisted ordinary treatment, where the patient's condition is getting worse, where there is no cellulitic abscess which can be evacuated and drained through the vagina or abdomen, an abdominal section should be performed and the subsequent procedure determined according to the condition found,—if general peritonitis, thorough washing out and vaginal drainage; if the uterus is affected as a focus, do a complete or partial hysterectomy, or remove a tubal or ovarian abscess, combined also with vaginal drainage if necessary, and possibly with abdominal drainage as well. If the uterus is uniformly affected, it must either be removed completely or let alone. I feel convinced that some lives, otherwise hopeless, could be saved in this way. Hysterectomy one would therefore regard as a very exceptional treatment in puerperal cases, nevertheless there is a distinct though restricated field for its use. In opening the abdomen in puerperal peritonitis, one should always be prepared for a possible hysterectomy.

The following is an account of a case where I recently removed the puerperal uterus with successful result. I am indebted to Dr Strain, the House Surgeon at Leith Hospital, for the notes of the history.

"CASE.—Mrs H. B., æt. 25, was admitted to Leith Hospital on 16th February 1906. She was sent in from Pilton Hospital, where she had been conveyed earlier in the day as a case of acute puerperal infection, by directions of a medical man who had been called in to see her. She is a housewife, and has been married for eight years. She has had six children, the first born seven years ago, and the youngest is æt. 3 weeks. She has had no miscarriages. She has had no trouble with any of her labours till this last one. She had twins in her first confinement (two boys), one of whom died, æt. 10 months, and the other is still alive. All the other confinements were natural. She nursed all her children. She was in the habit of getting up on the eleventh

better condition with strychnine, rest in bed, and feeding up. There was no evidence of appendicitis, and the provisional diagnosis was a possible right pyosalpinx. On the 21st February the patient was not so well. She complained of sickness, and vomited green bilious fluid several times, and the abdominal pain became very severe. The temperature had been 102·4° F. through the night, and the pulse 128, but both had fallen somewhat in the morning—the temperature more than the pulse. The pulse, moreover, was soft and compressible, and the patient's whole general appearance was such as to give great anxiety. Dr Ferguson saw the patient in the forenoon, and decided to operate that afternoon."

Operation.—I accordingly opened the abdomen in the middle line, and found the intestines and omentum matted together, especially on the right side, by extensive recent adhesions. On separating these, some of which were very vascular, I found some fluid imprisoned by the adhesions in the right side of the pelvic cavity; the omentum was also greatly thickened and apparently œdematous. There was no general peritonitis, as the inflammatory condition did not extend above the umbilicus, was chiefly on the right side, and was shut off entirely from the rest of the peritoneal cavity by the adhesions. On getting down into the pelvis, I found a piece of thickened inflamed omentum firmly adherent to the right cornu of the uterus, and on separating this the uterus at that spot presented the appearance of gangrenous inflammation, especially over two very definite areas. The right Fallopian tube was in a condition of acute inflammation. Clearly, the only thing to be done was to remove the uterus, and that as quickly as possible, as the patient's weak condition demanded rapid measures. As the mischief appeared to be limited to the upper part of the uterus, and as the cervical end seemed healthy, I decided to do a supravaginal hysterectomy, which I thought I could do more quickly. I accordingly rapidly carried out this procedure, and,

after shutting off the cervical stump from the general peritoneal cavity by sewing the peritoneal flaps over it in the usual way, I made an opening through the pouch of Douglas into the posterior fornix vaginæ, and thoroughly washed out the peritoneal cavity with sterilised water, having previously passed a large rubber drainage tube through the pouch of Douglas into the vagina. The patient was back in her bed in about three-quarters of an hour, and though her temperature swung slightly for a day or two, she practically never had a bad symptom after the operation. By the fifth day her temperature and pulse were normal, she was taking her food with relish, and having good sleep. She is now looking and feeling extremely well. I left the drainage tube in the pouch of Douglas for five days. I ought to mention that a small stitch-hole abscess developed in the lower end of the wound, which, however, quickly closed up.

I append the report on the uterus by Dr Ritchie, pathologist to Leith Hospital. Dr Ritchie did not get the specimen in its fresh condition, but only after it had been hardened for some days, and was thus, unfortunately, prevented from making a bacteriological examination.

"Over the fundus uteri there is considerable peritonitis, and especially over the right cornu. The inflammation appears to be of some duration, for on microscopic examination the fibrinous deposit is seen to be undergoing vascularisation. In the muscular wall of the uterus, below the peritoneal inflammation, there are several small abscesses, each about the size of a small pea—not exceeding ½ cm. in diameter. There were no abscesses found in the wall of the uterus elsewhere.

"There is acute inflammation in the right broad ligament around the Fallopian tube. The tube itself is not dilated, and its mucosa is healthy. The left tube and broad ligament are normal in appearance.

"The endometrium presents no signs of acute endometritis."

REFERENCES.

B. S. SCHULTZE.—Reference to his Report to the 59th Congress of German Naturalists, *Brit. Gynæc. Journ.*, London, 1902, vol. xviii.; *München. med. Wchnschr.*, 1902.

FEHLING.—*Lucina*, October 1902.

GRANDIN.—*Am. Journ. Obst.*, N.Y., April 1900.

VINEBERG.—*Am. Journ. Med. Sc.*, Phila., February 1900.

RICARD.—*Semaine méd.*, Paris, 1901; *Brit. Gynæc. Journ.*, London, 1901, vol. xvii.

The President (*Dr J. W. Ballantyne*) congratulated Dr Haig Ferguson on his success in the treatment of his case, and on the boldness with which he attacked it. The difficulty seemed to be which case was to be operated on, and which treated by the ordinary methods, including the serum. Another difficulty was the condition of the pelvic peritoneum. If it were infected, it would be difficult to get sufficient healthy peritoneum to make a satisfactory pelvic floor. It was a good thing to have such a record brought before the Society. No reference had been made to statistics, but Bumm's figures were (he believed) two deaths in five similar cases.

Dr Barbour said they were much indebted to Dr Haig Ferguson for the paper. The case was very interesting, and was one in which a successful result could be hoped for from operation. It was a localised infection, and it was of interest that there was no peritonitis. As a rule, such cases recovered. The suppuration was in the wall of the uterus, and no abscess was present in the broad ligaments. The swelling on the right side was omentum and intestine, with no pus. The operation could thus be performed without infecting the peritoneum; but it would be difficult to say that the result would have been as satisfactory if there had been pus formation in the broad ligament, or between the adhesions. It was difficult to lay down guiding rules; but the case described was one that

could be successfully treated by operation, because it was a late case. The deaths from puerperal sepsis usually occurred about eight or ten days after the birth.

Dr F. W. N. Haultain agreed with what had been said regarding Dr Haig Ferguson's pluck in that case. With regard to the indication, the difficulty was to decide whether the infection was general or localised. His own experience was confined to one case of sloughing fibroid, where the temperature went up to 104° on the fourth day. It was removed with satisfactory results. The great danger was the possibility of infecting the peritoneum. He considered that panhysterectomy was a safer operation than the supravaginal, as in the latter they cut through a uterus which was infected, but in the former there was less risk of infecting the peritoneum. It was very difficult to decide the cases for operation, and he considered they should have a special indication in the form of a local condition. In an ordinary case, where they had only to suppose a local condition, he would hesitate to do the operation. This case would stimulate them to further exertions in these conditions. He supposed Dr Ferguson had been stimulated to operate on the probability of finding a pyosalpinx.

Mr Scott Carmichael said he had seen such a case in the klinik of Professor Martin of Greifswald. Marked puerperal fever came on on the third day, and on the seventh the uterus was removed *per vaginam*. The case presented all the symptoms of localised peritonitis, as in Dr Haig Ferguson's case. The patient died, and septic thrombosis was found in the pelvic veins, extending up to the inferior vena cava. The vaginal operation had not been sufficient. He considered it was important to examine the uterine discharge beforehand, as the prognosis varied according to the proportion of streptococci to staphylococci present in it. If there were more of the former than the latter the prognosis was bad, and they would have to operate sooner. Symptoms were often very misleading. They

might have all the symptoms of peritonitis when none was present. One might have a pyometra, and from peritoneal reaction get all the symptoms of peritonitis. With regard to the operation, a radical operation by the abdomen must be done very early, as the radicles of the ovarian veins soon became thrombosed, especially in streptococcal cases.

Dr Darling asked if the condition of the uterus described by Dr Haig Ferguson was not analogous to acute suppurative gastritis.

Dr Haig Ferguson thanked the Society very much for the kind way they had received his paper. With regard to examination of the uterine contents, the uterus was empty, and there was practically no discharge. The septic focus was outside the uterus. No bacteriological examination was made from the uterine cavity. Probably suppurative gastritis was analogous to his case, as Dr Darling had suggested. He believed that half of the hitherto fatal cases of puerperal peritonitis could be saved by washing out the peritoneal cavity, and drainage.

VI. A CLINICAL EXPERIENCE OF ECTOPIC PREGNANCY AND ALLIED CONDITIONS.

By F. W. N. Haultain, M.D., F.R.C.P. (Edin.), Physician, Royal Maternity Hospital, Edinburgh; Lecturer on Obstetrics, Edinburgh School of Medicine.

There is no more perfect clinical picture than that portrayed by a typical case of ectopic pregnancy. Amenorrhœa followed by irregular hæmorrhages, discomfort in one or other side culminating in sudden intense abdominal pain with more or less shock and the shedding of a uterine cast:—with such a clinical story, he who runs may read. The diagnosis hardly requires the detection of physical signs. On the other hand, in certain cases the symptoms are so indefinite and the history is

so involved, that the interrogation of the patient is absolutely valueless, while the physical signs may be so closely simulated by other conditions that even to the expert the certain diagnosis is not only difficult, but almost impossible.

Having had a considerable, though by no means large, experience of such cases, I have presumed to lay it before the Fellows of the Society, in the hope that it may perhaps help to show what difficulties may assert themselves, and by these being discussed, tend to elucidate the diagnosis of this extremely important and dangerous complication of pregnancy.

My operative experience is drawn from twenty-one cases treated shortly after the occurrence of anxious symptoms, and eight operated on at a remote period after the acute symptoms had passed off. In three of the latter it is only fair to state that the diagnosis was made from the history alone; microscopic evidence being either negative or unattainable. In another case, as will be described, no operation was performed. Thirty supposed cases in all, therefore, may be said to form my entire practical experience. Of the first group of twenty-one cases three were wrongly diagnosed and were not extra-uterine pregnancies, so that the actual number of verified ectopic gestations is diminished to twenty-three.

Diagnosis.—Broadly speaking, the characteristic symptoms of ectopic pregnancy, before so-called rupture, may be said to be four:—

(1) A variable period of amenorrhœa.
(2) Irregular uterine hæmorrhage.
(3) Pelvic pain and discomfort.
(4) Shedding of uterine decidua.

The association of these go to form, as has already been shown, a typical case.

In the twenty-three cases under my observation where the history was carefully taken—

Amenorrhœa was absent in	5
Irregular hæmorrhage was absent in . . .	4
Pelvic pain or discomfort was absent in . .	4
Shedding of decidua was absent in . . .	16

The most constant symptoms were, therefore, pelvic discomfort and irregular bleedings, and, the least constant, expulsion of a decidua. In fact this occurred so seldom that, so far as my experience is concerned, its absence is of no moment in the diagnosis.

In two instances, before the severe symptoms of intraperitoneal hæmorrhage occurred there was no evidence of anything beyond a normal pregnancy; amenorrhœa was absolute, and the patient in no way complained of pelvic discomfort. One of these progressed to the twelfth week, and the second to the eighth week. In the latter, in spite of symptoms suggestive of intraperitoneal bleeding, the gestation was allowed to progress to the tenth week, when a severe hæmorrhage from secondary rupture called for immediate laparotomy. Amenorrhœa was absolute throughout. It will thus be evident from the history that individual cases may show little or nothing before the actually dangerous symptoms point to the serious nature of the condition, while, as a rule, even should the classic symptoms be present, they are frequently considered by the patient to be of such slight consequence that medical advice is but seldom taken. Hence the rarity with which an actively growing ectopic gestation is met with before dangerous complications occur.

Perhaps the symptom above all others which gives rise to apprehension on the part of the patient is the frequent and irregular occurrence of hæmorrhage either with or without previous amenorrhœa. This leads one to consider what is the actual cause of the bleeding. Is it purely uterine, or is it tubal from the separation of the ovum? It cannot but be maintained

× Marks seat of rupture.

NATURAL SIZE.

FIG. 1.—Early Tubal Pregnancy removed for rupture, associated with severe intraperitoneal bleeding and collapse after ten days' amenorrhœa.

[*Face page* 136.

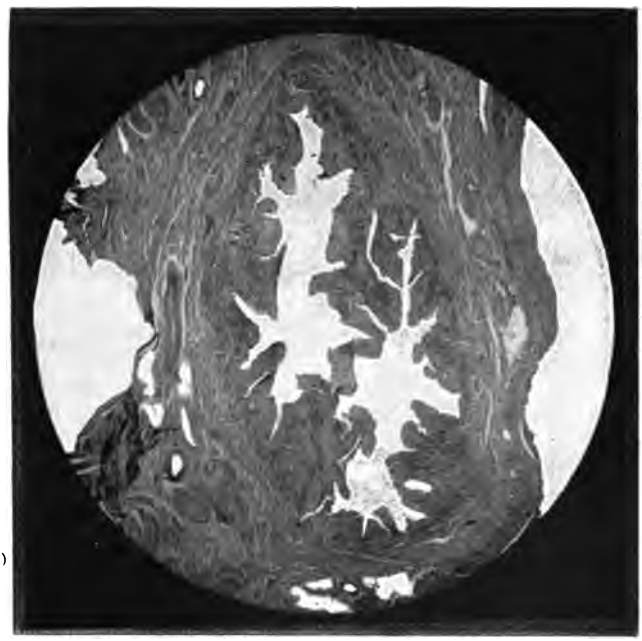


FIG. 2.—Section of opposite Tube from Tubal Gestation, showing decidual formation in mucosa × 8 dia.

[*Face page* 136.

FIG. 3.—Tubal Decidua. Opposite Tube from Tubal Gestation, showing spongy and compact layers × 60 dia.

[*Face page* 186.

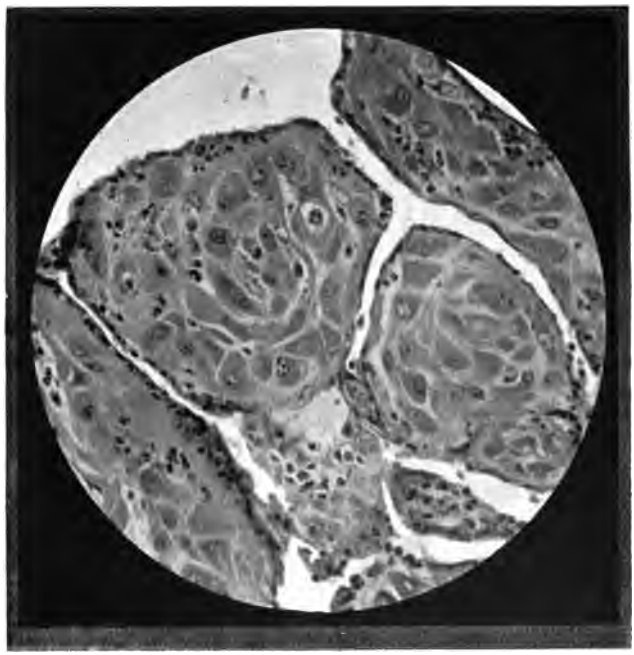


FIG. 4.—Tubal Decidua. Opposite Tube from Tubal Pregnancy, showing decidual cells, and low cubical epithelium × 200 dia.

[*Face page* 186.

that the attachment of the ovum to the tube is in the vast majority of cases feeble, and the tendency of all ectopic pregnancies is towards early separation, bleeding, and death of the ovum. Hence the frequency of tubal mole. This is probably due to the absence of a tubal decidua in the majority of cases. In some, however, there can be no doubt of the formation of a decidua, as I have verified in two of the cases I have microscopically examined, and, in one case in which I removed the uterus and opposite tube for a ruptured gestation sac, the opposite tube, though apparently normal to the naked eye, was found to be lined by a typical decidua from end to end. As is shown by the accompanying microphotographs this is divided into a distinct spongy and compact layer. (See Figs. 2, 3, and 4.)

On separation of the ovum, bleeding is the necessary sequence, and the escape of blood must be looked upon as more or less salutary, for should the blood be retained, rupture of the thinned tube must almost inevitably follow. Through its escape, however, excessive tension on the thin tubal wall is averted, and rupture avoided. The direction of the blood-flow will necessarily follow in the line of least resistance, and will thus pass either inwards towards the uterine cavity, and give rise to irregular hæmorrhages, or outwards through the abdominal ostium into the peritoneal cavity, and occasion abdominal symptoms. When an extensive separation occurs it is probable that the blood will pass in both directions, hence the association of vaginal hæmorrhages at the time of the severe symptoms, due to the intraperitoneal bleeding. One may therefore expect, as is confirmed by observation, that in some instances the bleeding may proceed entirely in one or other direction, and death of the ovum simultaneously result from separation. This will account, on the one hand, for these cases of tubal mole without serious symptoms having manifested themselves, as the bleeding occurs only from the vagina, and on

the other hand for intraperitoneal hæmorrhage without vaginal bleeding.

Further, it is possible that the rapid distension of the tube in these cases may give rise to the severe pain in the side, which is such a constant symptom at the time of marked separation. In ectopic gestation hæmorrhage from the vagina or into the peritoneal cavity through the abdominal ostium might fitly be termed "threatened tubal abortion," as it in every way coincides with the intra-uterine condition known as "threatened abortion." Shedding of the decidua probably results after the death of the ovum.

As will be noted from the table quoted, shedding of the decidua only occurred in four of the cases operated upon. This may be considered as due to the fact that the operation was undertaken before the change necessary for the separation of the decidua had taken place, or that it had come away unnoticed. It is probable that the uterine decidua is not shed in the majority of cases until some time after the death of the ovum. This explains its expulsion in some cases after the gestation sac has been removed by operation. In one such case the bleeding which attended it on the night after the operation nearly caused the death of the already exsanguine woman, and had to be arrested by vaginal plugging. This is surely a variety of post-partum hæmorrhage not hitherto described.

Intraperitoneal escape of blood through the abdominal ostium has been shown by Cullingworth and others to be by far the most frequent cause of urgent symptoms; in this my experience entirely coincides. Of the twenty-one cases I have operated upon, in only six has the actual tubal rupture been found. In only one of these has the condition been met with before the ninth week. This exception, however, is sufficiently striking to be worthy of detailed description:—After ten days' amenorrhœa the patient was suddenly seized with the usual acute symptoms of intraperitoneal bleeding, and in the course

of five hours was reduced to such an exsanguine state that the pulse was almost imperceptible at the wrist. As the specimen shows, the gestation was about the size of a pea and was situated in the ampullary portion of the tube. The bleeding in this instance seemed to be due to the perforation of a large vein (Fig. 1).

The differential diagnosis between intraperitoneal bleeding from actual rupture of the sac as opposed to escape from the ostium of the tube is mainly to be based upon constitutional signs, particularly the temperature. The physical signs which develop from the ostial trickle consist in sudden severe hypogastric pain, particularly referable to the side, marked tenderness of the abdomen, and an increased temperature; while in cases of rupture where the bleeding is naturally more severe, the symptoms of pain are associated with a distinct fall in the body heat, and more evidence of shock. In these cases I have noted at the same time the patient complained of marked epigastric tenderness and discomfort.

Of course, in cases where the bleeding from the abdominal ostium is excessively severe the same symptoms will appear, but such a condition is quite the exception. As a rule, bleeding through the ostium is limited in amount and seems to be spontaneously checked by a resulting local peritonitis by which the effused blood is encapsulated. A definite pelvic swelling can therefore in the course of some hours be mapped out. If large, this is usually retro-uterine and dislocates the uterus forwards in front of it. The acute symptoms having passed off, the patient soon returns to her previous state of health, only, in the majority of cases, to be subjected to a recurrence of similar symptoms from renewed extravasation of blood. The rapid return of the patient to a feeling of well-being, and the absence of abdominal tenderness with the completely normal state of the pulse and temperature, frequently throw the medical attendant off his guard and lead him to temporise

until another and perhaps severer intraperitoneal hæmorrhage develops. Should death of the ovum and complete separation occur, the hæmorrhage may permanently cease and the blood be absorbed, giving rise to the cases of so-called complete recovery. In these cases, however, unless the ovum has itself been expelled, it must remain as a foreign body in the Fallopian tube (tubal mole). In exceptional instances, when very small, entire absorption seems to be possible and the tube is restored to its original patent state. Usually, however, a permanent occlusion results (hæmatosalpinx), which frequently gives rise to prolonged symptoms of pelvic discomfort, and occasionally from infection becomes the seat of grave pyogenic mischief.

In the same way blood effused into the peritoneal cavity may be absorbed or remain as an encapsulated mass, which may subsequently be infected and form a pelvic abscess, or give rise to much discomfort from the formation of adhesions to the uterus and it adnexa, or to the surrounding viscera.

Differential diagnosis.—As may be inferred from what has already been stated regarding the absence of a typical history, the certain diagnosis of ectopic pregnancy is frequently one of the greatest difficulty, indeed it is a question if it is possible, as it may be simulated by other conditions in which the physical signs are identical. It would be invidious in a short paper to pretend to consider the many conditions with which it has been confounded. I shall therefore confine myself to the record of mistakes in my own experience.

These may be divided into, firstly, cases operated upon in which I expected to find an extra-uterine gestation; secondly, a case diagnosed otherwise, in which ectopic pregnancy was found.

(1) Mrs H., 35; menstruation irregular; was suddenly seized with acute abdominal pain and with faintness. She

showed the signs of concealed hæmorrhage. The abdomen was tender on pressure, and on pelvic examination the uterus was felt to be somewhat enlarged, and to the right there was a swelling the size of a turkey's egg. On opening the abdomen the cavity was found filled with blood, and, on the right side of the uterus, a dermoid ovarian cyst, with a ruptured vein in the pedicle.

(2) Mrs P., aged 27. After five weeks' amenorrhœa complained of great pelvic discomfort. On bimanual examination the uterus was found enlarged and pushed forward by a soft swelling, which, when laparotomy was performed, proved to be a simple unilocular ovarian cyst associated with pregnancy.

(3) Mrs K., aged 40, complained of profuse irregular vaginal bleeding which had lasted for ten months, and of having recently suffered from retention of urine necessitating the occasional use of the catheter. A large hard swelling was found in the retro-uterine pouch which pushed the uterus forward. Incarcerated fibro-myoma was diagnosed, but on operation a large tense blood-sac was found enclosing an atrophied ovum.

(4) Mrs B., aged 30, complained of constantly recurring vaginal hæmorrhage, which had lasted for three months after a menstrual period delayed a few days. There was a history of persistent pain in left side with severe exacerbations. Temperature normal—pulse under 100. On vaginal examination a soft, tender, pulsating, cystic swelling was felt to the left of the uterus about equal in size to a turkey's egg. I considered it to be a tubal mole, but found on opening the abdomen an ovarian abscess and salpingitis.

A case which came under my notice with the late Dr Milne Murray is perhaps interesting in this connection, although no operation was performed, and may be recorded:—

Mrs S., aged 26, after two months' amenorrhœa expelled

from the vagina a distinct uterine decidual cast, associated with much pain and hæmorrhage. Five weeks afterwards she complained of severe pelvic discomfort. On examination a swelling equal in size to a small cocoanut was found in the pelvis, and to the left a body which appeared to be the uterus could be distinctly felt, and into which a sound was passed over four inches. In the course of examination it was felt that the swelling changed markedly in consistence, which suggested an intra-uterine pregnancy. Three months afterwards she expelled a six months' ovum, and on subsequent bimanual examination a bicornute uterus was distinctly made out.

Another case which fortunately I did not operate on is of much interest:—

Mrs McL., age 30. Married five years; no children; complained of being seized with intense abdominal pain. She gave a history of two months' amenorrhœa, followed by severe, almost persistent, vaginal hæmorrhage for the last three weeks. Bowels irregular—constipation alternating with diarrhœa. On palpation an exceedingly tender swelling was found to the right of the middle line in the hypogastric region, which I took to be the gravid uterus pushed over by a tense, ill-defined mass on the left side, over which there was also considerable tenderness on pressure. From the sudden onset of the severe pain I diagnosed a combined intra-uterine and tubal pregnancy, and determined to operate. In the usual preparation for operation a large dose of castor oil was given, with the result that the left-sided swelling rapidly subsided, and the patient was restored to complete health.

From the foregoing cases it will be evident that the differential diagnosis may, in certain instances, be one of the utmost difficulty, and it is almost impossible to see how mistakes can be avoided. Other similar cases might be cited, such as the

difficulties which may occur in differentiating gravid retroversion, and the coexistence of fibroids and pregnancy. But perhaps the most common condition with which it may be confounded is a simple early abortion. The presence of the irregular and profuse hæmorrhages which occur after a short period of amenorrhœa, with the painful expulsion of a uterine cast may readily be considered an ordinary abortion, if no thorough examination be made of the pelvic organs. Further, in many instances, even though no decidual cast has been noted to be expelled, the diagnosis of simple abortion is most readily come to from its comparative frequency; and it is only after severe symptoms of intraperitoneal hæmorrhage have occurred, that the true condition of affairs is made apparent. Such being the case, it must be strongly urged that in every case of apparently early abortion the pelvis should be carefully examined, and mistakes thus avoided.

Perhaps one of the most striking results of my experience has been the frequency of recurrence of tubal pregnancy. In four cases this has shown itself. In one, after removal of a tubal gestation on the right side, I had to remove a similar condition on the left side within nine months. In a second, a recurrence took place in the opposite tube within eighteen months, and was removed by another operator. In a third, a distinct history of tubal gestation in the left tube was fully verified two years afterwards, when I operated for a ruptured sac on the right side; while the fourth was an identical case, the position of the gestation sac being reversed. Intraligamentary bleeding from rupture I have met with only in two cases; in one I operated immediately on its occurrence; while in the other I was urgently called to operate for severe intraperitoneal bleeding, due to secondary rupture through the broad ligament.

Treatment.—As regards the treatment of the condition, increasing experience convinces me more and more that it

resolves itself into removal in all cases. A tubal pregnancy must be considered in the light of a malignant growth, and a continued menace to the life of the patient so long as it is present. To temporise in the fond hope that absorption and a spontaneous cure will occur is totally unworthy of consideration, as at the best one can hardly hope for a complete cure to be obtained. Occasionally, I admit, symptoms may entirely cease, but an occluded tube must, in the majority of these cases, be the lasting result. In many instances, however, sudden and severe complications necessitate immediate interference under conditions which, from their urgency, are by no means as satisfactory as if removal had been adopted at an earlier stage. As I have previously stated, I have had occasion to operate on eight cases at a remote period after well-marked evidence had shown itself of the presence of tubal pregnancy;—three times for constant pelvic pain, twice for suppuration, and once for acute intraperitoneal bleeding:—all of which might have been avoided by prompt action when the condition was first discovered.

It is generally admitted when severe intraperitoneal hæmorrhage is present immediate operation forms the patient's only chance. In cases where an intraperitoneal ooze of blood indicates its presence, operative procedure need not be so immediate, but removal at the earliest convenient opportunity is demanded. In like manner the excision of a tubal pregnancy, if it should be diagnosed before symptoms of hæmorrhage have appeared, is essential.

Another strong point in favour of early operation is the ease and safety with which it can be accomplished, as the adhesions, if present, are few and easily separated, while in a later stage they may be extremely dense and difficult to manipulate. To put it succinctly, early operation is usually easy and safe, whilst it removes all chance of further trouble. To temporise on the bare chance of a complete cure by absorption

is to expose the patient to definite risks of suppuration, continued growth of the gestation, and recurrent severe hæmorrhage, while the operation itself is frequently rendered one of the utmost difficulty.

As regards the *modus operandi* I have nothing original to suggest, but the method I have adopted in recent cases is to ligature the infundibulo-pelvic and uterine ends of the sac, which I subsequently enucleate from between the layers of the broad ligament, and stitch the latter together by a fine continuous suture. In old-standing cases, where a hæmatocele has been shut off by strong adhesions, or where the blood-clot is enclosed between the layers of the broad ligament, after enucleation of the sac and surrounding blood-clot, I pack the cavity with sterilised gauze, the end of which is pushed through an opening in the fornix vaginæ. By this means sufficient drainage is afforded, while at the same time the troublesome venous ooze is stopped. As far as possible, the cavity with the packing is shut off from the peritoneum by bringing the serous edges of the sac together by fine sutures.

Amongst the cases mentioned I have unfortunately to record four deaths. In only one of these, however, was the operation undertaken shortly after the onset of symptoms. In this instance an early interstitial tubal rupture had reduced the patient to the utmost limits of exsanguinity, from which she never rallied. The remaining three operations were, in two instances, performed for secondary peritonitis; one of these was purulent and almost hopeless from the start. The fourth death resulted from a case in which secondary rupture had occurred several weeks after the initial signs of intraperitoneal bleeding. From an experience such as this it can hardly be wondered how strongly I am opposed to anything but immediate removal, when even the probable diagnosis of the presence of tubal gestation is made.

To summarise, the chief points which I have attempted to bring out and which I should like to emphasise are:—

(1) The difficulty of diagnosis from the irregularity of the signs and symptoms.

(2) The frequency with which it is simulated by other conditions.

(3) The ease with which it may be mistaken for an ordinary abortion, and the necessity for thorough pelvic examination in all such cases.

(4) And lastly, but most urgently, the absolute necessity for removal as soon as even a probable diagnosis has been made.

The President (*Dr. J. W. Ballantyne*) said the Society was to be congratulated on having had a paper that was not only interesting but packed full of facts interesting in themselves. There had been a tremendous development in our knowledge of the details of the subject in the last twenty years. We now knew an almost infinite number of facts concerning ectopic gestation. He (the President) had a unique specimen in which the opening in a ruptured sac had been closed by the after-coming head of the fœtus. This blocking had allowed time for the operation to be performed, as the head of the fœtus had checked the hæmorrhage taking place from the rupture of its own sac. The coincidence of recurrence in the opposite tube so frequently, was a remarkable and probably a significant fact. He thought Dr Haultain was quite right not putting the expulsion of the cast as a distinctive feature. The colicky character of the pain was well named by the Americans as "green apple" pain. The one simple fact of treatment was to open the abdomen if we were fairly certain of the diagnosis.

Dr Barbour said that the subject was interesting from a practical point of view. The difficulty in a diagnosis was well brought out by a case of extra-uterine gestation which came before him several years ago, and which went round all the

leading gynæcologists and was diagnosed differently under different circumstances. It was first diagnosed as an abortion, then a month later as cellulitis following abortion. Two months later it was diagnosed as an ectopic gestation, and subsequently as an abdominal gestation. The fœtus could be felt moving freely in the abdominal cavity. Later on the patient was attended by a practitioner at full-time on the idea that it was a uterine gestation. There were labour pains, but nothing came away. The fœtus died, and at a post-mortem some months later it was found in a thin sac of adhesions in the peritoneal cavity. That case showed the mistakes in diagnosis that might be made according to the stage at which the case was seen. He congratulated Dr Haultain on the excellence of his operative work and especially on his interesting paper, particularly as regards the occurrence of extra-uterine gestation several times over in the same patient. Dr Haultain raised the question of the source of the hæmorrhage, and held that it came from the tube and escaped by the uterus; but Dr Barbour thought that it might be accounted for by the breaking down of the uterine decidua. The pelvic pain and the bleeding did not always occur together: in many cases of acute pain there was no bleeding at all, and the cases in which no cast was expelled could only be explained by its molecular disintegration. In 75 per cent. of Dr Haultain's cases no cast was recognised, which showed that the decidua was discharged in small portions; and cases in which a decidua was discharged and yet the gestation went on, might be cited in evidence that the death of the embryo was not necessarily a factor in the breaking down of the uterine decidua. He associated the hæmorrhage with the breaking down of the decidua rather than bleeding from the Fallopian tube.

Dr Haig Ferguson thanked Dr Haultain for his interesting paper. With regard to diagnosis, he had seen six cases where the bladder was much distended in ectopic gestation. Three of the cases were sent to him as ovarian tumours. An import-

ant point not referred to was the size of the uterus. He had seen two cases where the uterus was not enlarged. They must clearly bear in mind that enlargement of the uterus did not occur in every case of ectopic pregnancy. There was no doubt that not a few cases of ectopic pregnancy were mistaken for ordinary abortions before the true condition was recognised. In the absence of local examination it was not to be wondered at that such errors occasionally arose, and it but served to show the importance of a careful bimanual as a routine practice. A very instructive and interesting point Dr Haultain had emphasised was the tendency in some cases to recurrence of the condition in the other tube three or four years after the first operation. A point he wished to ask about, and which Dr Haultain had not referred to, was the occasional occurrence of uterine hæmorrhage after the operation. He had a case operated on for severe abdominal bleeding from rupture of the gestation sac, and though almost absolutely exsanguine, the patient made a good recovery. On the third day she had a most severe hæmorrhage, like flooding. He removed a piece of decidua and packed the uterus. The patient nearly died from the uterine hæmorrhage. He had met with similar hæmorrhage in other two cases, though not to the same degree.

Dr Haultain in reply thanked the Fellows for their comments on the paper. The hæmorrhage following the operation was probably due to expulsion of the decidua, which became loosened after the removal of the sac. He did not for a moment believe that the tube was the origin of the bleeding in all cases; it might occur from separation of the decidua. Bleeding often occurred without pain, and *vice versâ*. When no pain was present, free bleeding occurred; but if the blood distended the tube, great pain occurred. If the blood passed into the abdominal cavity, peritoneal pain came on, which was worse than in the other form. It seemed to him as if the bleeding came from the tube owing to separation of the ovum.

VII. NOTES ON A CASE OF INTRAPERITONEAL HÆMORRHAGE OCCURRING DURING LABOUR; RECOVERY.

By D. A. CALLENDER, M.B.

THE following notes of a case I had under observation some time ago may be of interest, as I have not been able to find any reference to such a condition in any of the recently published works on Obstetrics.

At 5.30 A.M., on the 5th of August 1902, I was called to a patient (iv.-para), age 40, who had been in labour for about six hours. The previous confinements had been normal ones. On examination the lips were pale and blanched, and the surface of the body was cold and covered with a clammy sweat. The pulse was 130 per minute and very feeble, and the temperature was subnormal. In fact, she presented all the symptoms of an internal hæmorrhage. There was in addition considerable œdema of the upper and lower limbs, and a catheter-drawn specimen of the urine revealed the presence of both blood and albumen in large quantities. The urine was distinctly smoky in appearance, and was of high specific gravity. There had been no undue loss of blood *per vaginam*. On abdominal examination no fœtal heart sounds, could be heard, and the patient said she had felt no movement for two days. On vaginal examination the os was the size of half-a-crown and very rigid, and there was a certain amount of bogginess in the pouch of Douglas. Syrup of chloral ʒj was administered without any marked effect. On account of the increasing collapse, and the possibility of there being a concealed accidental hæmorrhage, I dilated the os as rapidly as possible, ruptured the membranes, and delivered with forceps a still-born child. The third stage was short, lasting only a quarter of an hour, and there was no abnormal loss of blood from the uterus. After delivery the

uterus retracted well, although on percussion there was dulness in both iliac regions. The pulse still continued feeble and rapid. Whisky was given by the mouth in ℥ss doses every two hours, and saline injections by the rectum were administered every three hours. Hot bottles were applied to the feet, and mustard leaves over the heart. Digitalin, gr. $\frac{1}{100}$; strychnine, gr. $\frac{1}{60}$; and ergotinin, gr. $\frac{1}{60}$, were given hypodermically, and this was followed in a short time by a slight improvement in the pulse. An exploring needle was passed into the left iliac region and some blood-stained fluid was drawn off. At 10 P.M. digitalin and strychnine were again administered in the same doses as previously. The uterus was firmly retracted.

August 6.—The dulness in the flanks was less marked, and the pulse was more forcible, regular, and stronger, and only 100 per minute. The lips were of a better colour, and the temperature had risen slightly. The first sound of the heart became more distinct, and systolic murmurs were heard in all the cardiac areas. The œdema was still present although the patient was passing an increased quantity of urine. Albumen was still present, and on microscopical examination of the deposit there were seen granular tube casts and some bladder epithelial cells. The patient was being kept strictly on a milk diet.

August 7.—There was again a slight improvement in the patient's condition; the pulse was 96 per minute and the temperature 98°.

August 8.—The temperature was normal and the pulse 98 per minute. The bowels moved naturally, and the amount of albumen in the urine was diminishing. The uterus was well retracted, although there was some slight tenderness in the right iliac region. There was no sickness or nausea, and the patient slept well. The lochia was fairly abundant, but otherwise normal.

August 10.—The pulse was 85 per minute and the temperature 99·4°F. The skin and bowels were active, and the abdominal

tenderness had disappeared. There was a normal tympanitic note in both iliac regions. There was still some slight albuminuria, but there was a free secretion of urine, and the œdema was becoming much less.

August 15.—The patient felt much better; the pulse was 85 per minute, regular, and of good tension, and the temperature was normal. There was only a faint trace of albumen in the urine, and the œdema had almost entirely disappeared.

From this date the patient rapidly improved, and by the 1st September was able to go for a change to the country.

Remarks on the Case.

This case is interesting for two reasons. Firstly, that at the onset of labour there was some doubt as to the diagnosis, and secondly, the fact of there being albuminuria in such considerable amount without the presence of any eclamptic seizures. At first sight the case closely simulated either a concealed accidental hæmorrhage, or a rupture of the uterus.

As I had not been engaged to attend the patient at the confinement, I could not say whether any albumen was present in the urine or not previous to the onset of labour. There was certainly a history of dropsy and anæmia, and the vessels were decidedly thickened and the blood-tension high, and one naturally came to the conclusion that it was not an albuminuria dependent on the pregnancy, but due to some long-standing kidney disease. The history was that she had been in labour for six hours, and that she was suddenly seized with acute abdominal pain and tenderness, and became collapsed. The pains had been strong and forcible. Such symptoms would lead one to suppose that a rupture of the uterus had taken place. Very little blood, however, had escaped by the vagina, and on examination no tear could be felt in the uterus, there was no receding of the presenting part, and the size of the uterus remained unchanged.

After excluding rupture, I then thought of the possibility of a concealed accidental hæmorrhage. Accordingly, I at once dilated the os, ruptured the membranes, and delivered with instruments a still-born fœtus. Much to my surprise there was no abnormal hæmorrhage, and the placenta was expelled naturally within a quarter of an hour. The uterine retraction was fairly good. Thus one could exclude concealed accidental hæmorrhage as being the cause of the collapse.

As I have stated above, an exploring needle was passed into the left iliac region and some blood drawn off. This fact suggested there having been a rupture either of the peritoneal coat of the uterus, or of one of the smaller branches of the uterine or ovarian vessels which caused the collapse, and which ceased by maintaining firm uterine retraction.

The cause of this hæmorrhage may be difficult to explain. If we take cerebral hæmorrhage as an analogy, there are always diseased vessels and chronic renal disease preceding the rupture. Such evidently was the case in the present instance; the hæmorrhage taking place in the uterine instead of a cerebral vessel. After labour the uterus retracted firmly, which caused retraction of the uterine vessels, and so arrested the hæmorrhage. The treatment to adopt in such cases is to end labour as rapidly as possible, so as to ensure rapid and efficient retraction of the uterus.

The question of abdominal section was raised, but on account of the collapsed condition of the patient it was considered inadvisable.

Meeting VI.—May 9, 1906.

Dr J. W. Ballantyne, *President, in the Chair.*

I. The following gentlemen were elected Ordinary Fellows of the Society:—A. C. McMaster, M.B., Ch.B., Australasian Club, Edinburgh; A. J. Lewis, M.B., Ch.B., Royal Maternity Hospital, Edinburgh; H. P. Thomson, M.B., Ch.B., Royal Maternity Hospital, Edinburgh.

II. *Dr Haultain* showed—(*a*) A GRAVID UTERUS of about six months, with A LARGE FIBRO-CELLULAR TUMOUR situated below and on one side of it. The specimen was of interest, in so far as it compared strikingly with a similar specimen he had shown at the last meeting. In the one there was no sign of labour, but in the other signs of labour were present. The patient was actually in labour. The specimen showed the dilated cervix with the bag of fore-waters, and the thinned-out lower uterine segment with the retraction ring. The uterus lay to the left and well up under the ribs, and the lower portion of the tumour completely filled the pelvis, so that it was impossible to have a child. She suffered very little during the pregnancy. Previously she had had two children. The operation was very difficult as the fibrous mass was intraligamentary. Panhysterectomy was successfully done, and even after the removal of such a huge mass she suffered no shock, her pulse-rate never being increased over 72 per minute. (*b*) AN INTERSTITIAL CERVICAL FIBROID TUMOUR occupying the posterior lip of the cervix. The fundus uteri lay on the top of the mass. Panhysterectomy was exceedingly difficult, and the operation was prolonged. Those operations were probably the most difficult in gynæcology. It was not successful, and the patient died. The tumour was exceedingly soft and vascular, and of a more

cellular nature than an ordinary fibroid. (*c*) A PAPYRACEOUS FŒTUS sent by Dr McKay, of Berwick. It was one of twins, and expelled at full-time. The cord was twisted three times round the neck.

III. *Dr Haig Ferguson* showed A UTERUS WITH DECIDUOMA MALIGNUM. The history was very interesting. The patient was 47, and she had had ten normal pregnancies; the last, six years ago; and two miscarriages. She was admitted to the Royal Infirmary on 17th April. She had been in the Infirmary twelve weeks previously with myxoma of the chorion, after a period of six weeks' amenorrhœa. She then bled severely and she had severe vomiting. The abdomen began to swell rapidly up to the size of an eight-month pregnancy. Whilst in the Infirmary the hæmorrhage became very severe, and the os was dilated, and a hydatid mole removed by hand. There was no hæmorrhage, and the patient improved slowly, and went home on 29th March. On 7th April she had a severe flooding, which was repeated on the 12th. She also had frequent vomiting. On 18th April (ten days after her readmission), the uterus was curetted, and the pathologist's report was deciduoma malignum. The interior of the uterus was smooth except above the internal os; and there were two fungating masses to be felt with the finger. Dr Ferguson removed the uterus by vaginal hysterectomy. Clamps were used, and the patient made a good recovery. The patient's pulse was over 140 and her temperature nearly 104° F. when she was placed on the operating table. Sections under the microscope showed an intense proliferation of both layers of epithelium of the villi. There were also large polyhedral cells, the nuclei having a wide network of chromatin. Also seen, were large multinucleated protoplasmic masses.

IV. *Professor Jardine* showed SECTIONS OF KIDNEY THE SEAT OF INFARCTION. The cortex was almost entirely gone. This was well illustrated by the microscopic sections.

V. ECLAMPSIA DURING PREGNANCY; DEATH FROM SUPPRESSION OF URINE; EXTENSIVE INFARCTION OF BOTH KIDNEYS.

By ROBERT JARDINE, M.D. (Edin.), F.F.P.S. (Glasg.), Professor of Midwifery, St Mongo's College; Senior Physician to the Glasgow Maternity Hospital.

MRS McC., vii.-para, æt. 36, seven months pregnant, was admitted to the Glasgow Maternity Hospital on 11th March 1906, at 7.30 P.M., suffering from fits. The fits had commenced in the morning, and there had been seven or eight of them. A few days before, swelling of the legs and feet had been observed, and the day before admission the patient had complained of severe headache.

On admission the patient was unconscious, and very restless, with considerable œdema of the face, legs, and lumbar region. The uterus was soft and flaccid, and the os admitted a finger. The heart sounds were pure, and the pulse 110, of moderate tension. The urine became almost solid on being boiled.

Twelve fluid ounces of blood were drawn from the arm, and 2 pints of saline (sodium chloride and acetate) were transfused. The stomach was washed out, 2 ozs. of Epsom salts were administered, the rectum was washed out, and a hot pack was applied. The patient had three fits before midnight, and was very restless. An ounce of Epsom salts, half a drachm of chloral, and a drachm of bromide of potassium were given by the stomach tube. At 4 A.M. the hot pack was repeated, and the skin acted well. During the remainder of the night and the next day the patient slept a good deal. The bowels acted freely four times.

12th March.—The patient was semi-conscious, but would or could not reply to questions. We afterwards discovered that she was stone deaf, and was unable to speak in a way that we

could understand. She was practically a deaf mute, and we could only communicate with her by means of the deaf and dumb alphabet. She drank freely of milk and imperial drink, and a diuretic was also given to her. She passed urine freely in bed. It contained 10 per 1000 albumen (Esbach) and over $1\frac{1}{2}$ per cent. of urea. There were granular casts, but there was no blood in it. She passed 35 fluid ounces in twelve hours, *i.e.*, from 9 P.M. on the 12th to 9 A.M. on the 13th.

13th March.—About 3.30 P.M. a seven-months' fœtus was born, breech first. The after-coming head was gripped by the cervix, and chloroform had to be given to get it through. About an hour after delivery the patient began to vomit, and was very sick throughout the night. She took very little fluid. A little urine was passed in bed during the night, but there had been almost complete anuria from midday of the 13th. The urine obtained in the early morning showed only 2 per 1000 albumen (Esbach) and $1\frac{3}{4}$ per cent. of urea.

14th March.—At 3 P.M. the patient had a fit. Two pints of the usual saline solution were infused under the right breast and into the abdominal wall. The temperature was 98·8° F., and the pulse from 100 to 120. No urine was excreted.

15th March.—The patient was sick and vomited dark material, and was less inclined to drink. She took 32 fl. ozs. of milk in twenty-four hours, but no imperial drink. A hypodermic injection of $\frac{1}{60}$ grain of strychnine was given every three hours. Two more pints of saline were infused, and she was cupped and poulticed over the kidneys, and put into a hot pack. The bowels were very freely moved with croton oil. The mental condition was brighter, and the patient did not seem to suffer any inconvenience from the anuria. The temperature was 99° and the pulse 90.

16th March.—The skin showed a tinge of jaundice. The patient was quite bright mentally, and complained of hunger. She had a little bread and porridge given with buttermilk, for

which she expressed a desire. At noon she had $\frac{1}{8}$ grain of pilocarpine given hypodermically, and was immediately put into a hot pack. She sweated very profusely for hours, and there was no indication of pulmonary œdema. There were some slight facial twitchings, and 20 grains of chloral were given subcutaneously. About $\frac{1}{2}$ a fluid ounce of urine was obtained by catheter. There was only a trace of albumen in it. The poulticing over the kidneys was continued. The patient drank 25 fluid ounces of milk in the twenty-four hours.

17*th March.*—The jaundice was a little deeper. An attempt to inject saline fluid into the colon was frustrated by the patient's bearing down and expelling it. Cupping, pilocarpine $\frac{1}{8}$ grain, and the hot pack were repeated. The sweating was profuse. Two pints of saline were also infused. The patient slept a great deal, but there were no twitchings. One fl. dr. of urine was obtained by catheter. The pulse was still good, 80 to 90.

18*th March.*—There was no change in the condition. I consulted Dr Newman as to the advisability of cutting down on to the kidneys and incising the capsules. He was of opinion that it would do good if the suppression was from congestion, and that it was worth trying. He very kindly did this operation on the right side. The subcutaneous tissues were very œdematous, and there was a great deal of fat. The fat surrounding the kidney was somewhat adherent. The true capsule was incised and stripped off one side of the kidney nearly to the hilum, and off the other side slightly. An incision of about half an inch in length and $\frac{1}{3}$ of an inch in depth was made into the kidney substance. There was very little bleeding. The wound was packed with iodoform gauze and nearly closed.

The patient stood the operation well, but during the day her pulse rapidly failed. She became very restless and complained of abdominal pain, but there were no convulsions. She died ten hours after the operation, just about $5\frac{1}{2}$ days from the commencement of the suppression of urine.

The post-mortem examination was made by Dr Carstairs Douglas. There was some general œdema, but not great, and also slight ascites. The liver was of moderate size, pale and fatty. The bowels were normal. Both kidneys were enlarged and congested, especially the right one, which had been partly decapsulated and also showed an incision in the cortex. The capsule of the left kidney was easily stripped off. In both, the cortex was markedly diminished.

The heart was of moderate size, and fatty. The valves were healthy, and there were some ante-mortem clots in the right side.

The lungs were congested and œdematous, and showed emphysema of the anterior borders.

The kidneys and a portion of the liver were sent to Dr Teacher for microscopic examination, and he has very kindly undertaken to examine them thoroughly; he has furnished me with the following preliminary report.

"The organs received were a portion of liver and the two kidneys. The examination had been made by Dr Carstairs Douglas on the 20th of March, and the organs when received by me had been in formalin for twenty hours. The colours were very well preserved.

"The kidneys are somewhat larger than normal; they have been split in the usual manner. The capsule of the right kidney had been stripped off at the operation but replaced, and now lies separated from the cortex by a layer of blood-clot, which is of varying thickness up to a quarter of an inch. The capsule of the other kidney appears to be slightly thickened, but it strips readily. It appears slightly congested and there are numerous small hæmorrhages between it and the surface of the kidney.

"In section the kidneys present an extremely striking appearance. As a whole they are rather congested, but the contrast between the inner zone of the cortex and the medulla,

and their appearance, are not far removed from normal. The remainder of the cortex, however, over practically the whole surface of the organ, and in between the pyramids, is the seat of very profound changes, apparently of the nature of infarction. At all points there appears to be a layer of normal cortex next the medulla, but the outer parts of the cortex, forming from one to two-thirds of the whole, are sharply demarcated from this by a zone of intense congestion with extravasation of blood.

"The infarctions extend to the surface for the most part, but there are areas in which a narrow superficial zone appears to be left in a healthy condition. The infarcted tissue presents the usual dull, opaque, yellow appearance, with congested and hæmorrhagic margins.

"The pelves and ureters are normal. The walls of the larger blood-vessels appear to be slightly thickened, but there is no thrombosis or endarteritis. The cut ends of the blood-vessels lying between the cortex and medulla are fairly prominent, and they also can be seen to be free from thrombosis.

"Microscopic examination shows that the condition is an extremely widespread infarction of the cortex of the kidneys. The infarction is of fairly recent character, the necrosed tubules and glomeruli being still perfectly recognisable, although the nuclear staining is completely lost. The condition appears to correspond with the history of the duration of the illness. The disease involves the greater part of the cortex, but almost everywhere there is a narrow zone close to the medulla which, microscopically as well as to the unassisted eye, appears to have been in a healthy state. A very small amount of non-necrosed cortex is also seen on the exterior in places. The two kidneys are alike in this respect, the decapsulation having been done so late that it has apparently made no difference.

"The condition is associated with widespread thrombosis, which is confined to the smaller blood-vessels of the cortex, the

larger branches at the junction of the cortex and medulla being in all observed instances quite clear. There is a certain amount of chronic endarteritis in the small and medium-sized vessels, but I cannot believe that this is the cause of the condition. The larger vessels show only slight thickening of the tunica media, and no endarteritis. I have not been able to recognise embolisms. Up to the present I have failed to find micro-organisms in the necrosed tissues, although I find small areas of intense leucocytic infiltration which are suggestive of some septic condition.

"I am at present unable to offer any explanation of the condition. The liver shows slight fatty infiltration, but in other respects appears to be normal."

In the *Journal of Pathology and Bacteriology* for March, Drs Griffith and Herringham record "A case of necrosis of the entire renal cortex of both kidneys, together with thrombosis of all the cortical arteries, occurring in the puerperal state," which is practically identical with the present case. The patient had suffered from chronic renal disease for several years. She had no fits, but there was complete suppression of urine for the last six days of her life, and she only excreted 10 fluid ounces of urine during the last nine days. There was a trace of albumen in the urine, and there were also renal casts. The condition of the kidneys was exactly like that here described by Dr Teacher.

These authors could find only one other case recorded, viz., one by Rose Bradford and Lawrence, published in the *Journal of Pathology and Bacteriology*, 1898, vol. v., p. 197. The suppression had lasted seven days without any uræmic symptoms. The kidney condition was exactly the same.

The similarity of these three cases is very striking. Mine differed somewhat from the other two in that it was a case of eclampsia, but there was only one fit after the suppression had commenced. In none of the cases were there any uræmic

symptoms. In mine, on the third day, slight facial twitchings were noticed, but as strychnine had been given hypodermically, the twitchings were probably due to it. The authors of these two papers draw attention to this absence of uræmic symptoms, though neither external nor internal secretion was taking place.

I have seen two other cases of suppression of urine during the puerperium, one after a normal labour and the other after Cæsarean section. In the first there was no post-mortem examination. This case was reported by Dr Black in the first volume of the *Glasgow Obstetrical and Gynæcological Society's Transactions.* The other case I reported to this Society in 1898, and the record of it will be found in vol. xxiii. of the *Transactions.* The kidneys were examined microscopically by Dr R. M. Buchanan, and he reported that there was no very great departure from the normal. The tubules of the cortex were uniformly dilated, and the lumen of each tubule was filled with finely granular material. The straight tubules were also dilated and filled with the same material in a more coarsely granular form. There was no shedding of the epithelium, and no tube-casts were visible. The Malpighian bodies and the blood-vessels were normal.

In both of these cases there were uræmic symptoms, and the patients had a violent convulsion just before death.

In the first volume of the *Journal of Obstetrics and Gynæcology of the British Empire* there are two papers on "Suppression of Urine in the Puerperium," one by McKerron of Aberdeen, and the other by Boxall of London. McKerron notes two cases of his own and one of Dr Gordon's of Aberdeen, and adds brief notes of three others which he had found recorded, one by Dr McCrea in the *Canadian Lancet,* vol. xvi.; one by Dr Williams, *Lancet,* 1886; and the remaining one by Dr Bond, *Lancet,* 1889. Boxall gives notes of two cases. Two of McKerron's cases recovered: one after four days of total suppression, and the other after six hours in which only 4 fl. oz. of urine were

excreted. In all the fatal cases there were indications of uræmia. In one of Dr Boxall's cases a post-mortem examination was obtained, and the report was that "the kidneys were enlarged, very much congested, and showed evidence of old-standing disease of moderate degree, and also recent acute inflammatory softening." Nothing is said of the condition of the vessels of the cortex.

All these cases differed from the one just recorded and the two referred to, in that they showed distinct uræmic symptoms. Why this difference? As I am not a pathogolist I shall not venture on any explanation, but leave the problem to be solved by those who are versed in pathology.

VI. ECLAMPSIA DURING AND AFTER LABOUR; RECOVERY AFTER UPWARDS OF TWO HUNDRED FITS.

By Robert Jardine, M.D. (Edin.), F.F.P.S. (Glasg.), Professor of Midwifery, St Mungo's College; and Senior Physician to the Glasgow Maternity Hospital.

Mrs M. L., iv.-para, æt. 30, at the full time of pregnancy, was admitted to the Glasgow Maternity Hospital on 17th March 1906, suffering from fits. Her previous confinements had been normal, and she had not before been subject to fits. On the evening of the previous day she had had the first seizure, and had remained stupid for an hour. She had passed a fairly good night, and had been free from fits until about the middle of the day of admission, when they had begun again, and at least seven had occurred up to the time of admission at 7.45 P.M.

On admission the patient was dazed and stupid, with a marked alcoholic odour from her breath. There was slight œdema of the legs; the pupils were equal, and reacted to light; the heart sounds were pure; the temperature was 99·5° F., and the pulse 100. The vertex presented, and the os uteri admitted

one finger, but there were no uterine contractions. The urine showed a cloud of albumen, and there were some epithelial cells in it, but no tube-casts. The patient had a slight convulsion while she was being cleansed.

Treatment.—Under chloroform 2 pints of saline solution (sod. chlor. ʒi and sod. acet. ʒi to the pint) were infused under the right breast; the stomach was washed out, and a large dose of Epsom salts was given. The contents of the stomach included pieces of meat and onions, and gave a strong odour of alcohol. An enema was given, and she was put into a hot pack for half an hour. The skin acted well. The patient passed a good night.

18*th March.*—The patient was quite clear mentally, taking large quantities of fluid and passing urine freely. The bowels had been well cleared.

19*th March.*—She was somewhat dull, and complained of headache. Five grains of calomel, followed by a saline and a diuretic mixture of citrate of potash were given. She was passing at least 50 fl. oz. of urine *per diem.* The albumen had lessened in amount.

20*th March.*—About 5 A.M. a healthy female child was born naturally. The patient felt well.

21*st March.*—She was very well, and taking an interest in her child. In twenty-four hours she had drunk 60 fl. oz. each of milk and imperial drink, and had excreted 110 fl. oz. of urine. In the evening she complained of headache, and her pulse showed an increase in tension. Five grains of calomel and a saline were given.

22*nd March.*—About 5 A.M., just forty-eight hours after delivery, the patient had a fit, and was at once put into a hot pack. She had two more fits shortly after coming out of the pack. By noon she had had fourteen fits. I then bled her from the right arm to the extent of 15 fl. oz., and transfused 2 pints of my usual solution directly into the vein. During the

operation she had several fits, although she was partly under chloroform. As there was very little albumen in the urine, and the kidneys were acting very freely, I decided to use morphia. Half a grain was given hypodermically, and two hours later ¼ gr. combined with $\frac{1}{30}$ gr. of strychnine. The pupils became markedly contracted and fixed, and the respirations fell to 10 per minute, but the convulsions continued to recur every ten or fifteen minutes. Chloroform was given from 6 to 6.30, and the fits ceased during this time and for half an hour afterwards, but between 7 and 7.40 six occurred. The pulse kept varying between 90 and 120, and during chloroform administration it fell to between 60 and 70. At 10.40 P.M. we took 15 fl. oz. of blood from the left arm, and transfused 2½ pints of the usual solution. Between the two bleedings there had been at least thirty fits in spite of the morphia. Thirty grains of chloral and 60 grs. of bromide were given by the rectum. The bladder and bowels had been evacuated involuntarily during the day. A specimen of urine obtained by catheter early in the day gave no decided reaction of albumen. The sp. gr. was 1010, and the urea about 1 per cent.

23*rd March*.—Chloroform was administered at 1 A.M. for an hour and a half, but it was discontinued, as the breathing became gurgling and froth began to issue from the mouth. There was one convulsion during the administration. After this the fits recurred at from four to ten minutes' intervals. At 10.55 A.M. I performed lumbar puncture, and withdrew ½ fl. oz. of cerebro-spinal fluid. It came away in drops, but during a fit it ran quite freely. The fluid was quite clear, and Mr J. Hume Patterson, who kindly examined it, both by culture and the microscope, reported that it was perfectly sterile. In the twelve hours between the second bleeding and the lumbar puncture eighty-three fits had occurred. Two hours later there had been twelve fits, and I again punctured and injected ⅛ gr. of cocaine. The injection seemed to quieten the patient a little, but the fits

did not diminish in frequency until eight hours later, when there was a decided improvement. The pulse was now much weaker, and the temperature 103·4° F. At 6 P.M. feeding by the stomach tube was begun, when 10 fl. oz. peptonised milk, 10 fl. oz. water, and half a fluid ounce of brandy were introduced and repeated every three hours. Strychnine $\frac{1}{30}$ gr. was also given hypodermically every three hours. At 9 P.M. 30 grs. chloral and ʒi pot. brom. were added to the milk.

24th March.—At 4 A.M. the patient could be induced to swallow milk. At 6 A.M. 20 grs. chloral and 30 grs. of bromide of potassium were given by the mouth. The temperature was 102° F., and the pulse 116 and stronger. The nurse was able to get the patient to swallow about 5 fl. oz. of milk every hour. The urine obtained by catheter showed a marked cloud of albumen and a few pus cells, but no tube-casts. The sp. gr. was 1020. Up to 7 A.M. from the time of the injection of the cocaine there had been fifty-five fits. At 3.30 P.M. there were four more fits in quick succession. A dose of 20 grs. chloral and 30 grs. of bromide of potassium was given, and also 5 grs. calomel, followed by a saline. The pulse was very weak at times, about 120. There were no more fits until 10.45 P.M., when the final one, which was very slight, occurred. This made up the grand total of 199 during the puerperium, and with the eight which occurred before delivery, 207 in all; but I am quite sure that there were a number which were not recorded.

25th March.—The patient was in a stupor, the pulse irregular and weak, about 120; the temperature subnormal, 96° F. The strychnine $\frac{1}{30}$ gr. with the addition of $\frac{1}{100}$ gr. digitaline was continued every three hours, and the brandy was increased to 1 fl. oz. every three hours. Fifty fluid ounces of peptonised milk had been given in twelve hours, but as one of the stools showed a milky appearance the amount was reduced to 3 fl. oz. per hour. The albumen in the urine had increased to $1\frac{1}{2}$ per 1000 (Esbach).

26*th March.*—The patient was still very stupid, but resented being moved, as if she were sore. There was now a distinct yellowish tint of the skin and conjunctivæ. She would not swallow so readily. The albumen was still 1½ per 1000, and the temperature subnormal.

27*th March.*—There was a decided improvement. The pulse was 116 and stronger, and the temperature 97·2° F. The patient had brightened up wonderfully, and asked to see her baby and wanted to know its sex. She could answer some questions, but cerebration was still slow. There was still incontinence of urine and fæces. The albumen was only a faint cloud. In the afternoon the temperature had reached normal. The strychnine and brandy were now given every four hours.

28*th March.*—The patient was steadily improving. The temperature had risen to normal, and the pulse was 100. The strychnine and digitaline injections were stopped. Control of the sphincters was being regained.

After this the recovery was uninterrupted, and the patient was discharged from the hospital feeling quite well. A faint trace of albumen persisted in the urine. An examination of the fundus of the eyes revealed nothing abnormal.

The patient had no recollection of her first seizure, and had quite forgotten about the days she had been in hospital before and after her labour until the second seizure. She had forgotten all about having nursed her child for nearly two days. From the 17th to the 27th her life is a complete blank.

The case is such a remarkable one that I have given full details of its progress day by day. Whilst the case was in progress it was suggested to me that the condition was one of *status epilepticus* and not of eclampsia, and that if the case should prove fatal and leave for a post-mortem examination should be obtained, I should find a gross lesion in the brain. The fits were ordinary eclamptic fits with a short tonic and

longer clonic stage, and conjugate deviation of the eyes towards the right. The fits were nearly all severe, but the coma between them was not profound. The complete recovery shows that there could not have been a brain lesion. The patient had never had an epileptic fit in her life, so we may exclude epilepsy.

The treatment was certainly energetic. The saline transfusion seemed to do well in the first attack, but in the second attack, when it was combined with the bleeding, it had no effect. The morphia also failed. Advocates of morphia may say we did not use large enough doses, but I am glad we did not give a second ½ gr. dose, or we might have reduced the respirations to vanishing point. The lumbar puncture did not seem to have any immediate effect, but the injection of cocaine certainly seemed to soothe the patient, although the fits did not diminish in frequency until eight hours later. The recovery of the patient may have been due to it, but it is impossible to decide this point. What I believe saved the patient was that her kidneys were extremely active all the time, so much so that it was impossible to keep her bed dry for any length of time, and her heart was strong enough to carry her through. As soon as it showed any indications of flagging we stimulated freely with strychnine and digitaline every three hours, and also kept up the patient's strength by forced feeding by the stomach tube and by the mouth as soon as she could swallow. I was very much afraid that she would die from exhaustion after the fits ceased, and I think she would have done so if it had not been for the unremitting care of my House Surgeon, Dr E. N. Coutts, Sister Davidson, and the nurses, to whom my best thanks are due for their ceaseless care of my patient.

The President said the Society was indebted to Professor Jardine for his interesting records of cases. He considered they were amongst the most remarkable reported in the subject

of eclampsia. The first case was interesting as being the first (so far as he knew) where decapsulation of kidney had been done in Scotland for eclampsia. Edebohls had done it some years ago in America, and it was also being noticed now in Germany. Evidently Professor Jardine's was not the most suitable type of case for it. The second case was of interest from the great number of fits, and the recovery. They were glad to congratulate Professor Jardine on his successful efforts. He (the President) had done lumbar puncture in two cases; the fluid came away in drops, never with any force. The spinal injection of cocaine was a plan worth keeping in mind. It seemed certain that the best result was got by combining bleeding with saline infusion.

Dr Freeland Barbour said there were one or two interesting points. The first case seemed to show that there were some cases of eclampsia truly cases of uræmia due to primary lesions in the kidney. He understood the infarctions of the kidney sometimes described in other cases were due to toxæmia, and were associated with multiple infarctions in the liver and other organs. The idea with regard to eclampsia was that the toxæmia was primary, and the renal condition secondary. This case seemed to be a true case of uræmia due to a primary kidney lesion. With regard to the second case, he had found chloroform beneficial in eclampsia. He had given it off and on for many hours in one case, applying it at the onset of the fits. In that case the kidneys acted freely, and she recovered. The number of fits in the case was remarkable.

Dr James Ritchie said that the Society was much indebted to Professor Jardine for communicating these very interesting cases. Dr Ritchie believed that in such cases convulsions were accidental, not essential; and the first of Professor Jardine's cases seemed to support this idea, because whereas there were fits about the time of delivery, there were not any during the five and a half days of suppression of urine. The occurrence

of fits did not depend on the amount of albumen in the urine, they occasionally occurred when there was only a trace of albumen. They also occurred independently of kidney disease. Women who suffered from eclampsia probably had kidneys of which the excretory power was poor, but it was not uncommon to have a case of albuminuria of pregnancy with eclampsia in a first pregnancy, whereas in subsequent pregnancies the course was normal, there was no albuminuria, and the kidney was quite able for the extra work of pregnancy. He believed that albuminuria of pregnancy was not due to a kidney condition, but to toxæmia, the origin of which was not yet elucidated; it was related to the particular pregnancy, and probably lay inside the uterus. He believed that in all these cases three conditions were present. First, a peculiar condition of the central nervous system; some persons were liable to convulsions from slight causes, others suffering from a severe form of these conditions never had convulsions. Second, a toxæmic condition of the blood, which might be due to febrile, digestive, kidney, or other conditions. Third, some source of peripheral irritation; this during pregnancy and confinement would probably be at the uterus. Professor Jardine's first case was of interest, because the fits ceased soon after the birth, and it also showed that uræmia might exist in a severe form without convulsions being induced. He doubted the wisdom of giving milk at short intervals in such cases. He would be afraid to give five ounces of peptonised milk every hour, in case of producing a toxic condition of the blood.

Dr Haig Ferguson said he wished to give his thanks to Professor Jardine. He would like to know what the proportion of eclampsia in multiparæ was. In a multipara with eclamptic fits they always suspected a pre-existing kidney lesion. He had seen two or three cases of fits in multiparæ, and in all but one there was pre-existing kidney disease. They were uræmic fits, and not cases of eclampsia. The exception was a case

occurring the day after labour, when there was almost complete suppression of urine. Only a small amount of urine filled with blood, albumen, and tube-casts was drawn off. Previous to the labour the urine was normal. She was cured by venesection, and saline infusion and thyroid suppositories.

Dr Keppie Paterson referred to Dr Haig Ferguson's suggestion that latent disease of the kidney was present in these cases. He instanced a patient who had eclampsia in her second labour; she had no albuminuria in her first pregnancy, and the urine was examined in the second pregnancy in the sixth month, and found to be free of albumen. At the time of the second labour it was found to be highly albuminous. It decreased rapidly after labour. A third pregnancy had been passed without any albuminuria.

Professor Jardine thanked the Fellows for the way they had received the paper. Dr Barbour considered the first case uræmic, but there was really no indication of uræmia; and in the two other recorded cases of infarction of the kidney no indications of uræmia were present. As regards the kidney lesion, in the majority of multiparous cases of eclampsia there were previous lesions in the kidneys, and the toxic material had an increased effect on them. Dr Haultain considered the second case as not being eclamptic, as she was passing a large amount of urine, but that was due to the treatment, the injection of saline. Dr Ritchie criticised the feeding, but that was commenced after the cessation of the fits, and he (Professor Jardine) thought it saved the woman's life. It was very difficult to talk about eclampsia, as very little was known about it. The most recent idea in regard to the toxæmic theory was that the toxin originated in the placenta. But his second case had had 199 fits after the placenta was removed. Lactic acid had been found in the blood in some cases where the patients were cyanosed and comatose. He believed its presence was due to the cyanosis.

VII. NOTE ON A CASE OF BROAD LIGAMENT CYST, WITH TWISTED PEDICLE, AND BLOOD EXTRAVASATION INTO THE CELLULAR TISSUE ALONG THE LEFT OVARIAN VEIN.

By A. H. Freeland Barbour, M.D.

Cases of hæmorrhage on the distal side of a twisted pedicle, I mean into the tumour itself, are of everyday occurrence; but cases of hæmorrhage on the proximal side are sufficiently rare to justify this case being recorded.

The patient was an unmarried woman, aged 40, who was sent into the Royal Infirmary by ambulance from Bathgate on 28th February. There was a solid tumour in the pelvis, pushing the uterus upwards and forwards, and another in the lower region of the abdomen, which was apparently cystic, but so very tender that a satisfactory examination was impossible. Four days previously the patient had been seized with acute abdominal pain, faintness, and vomiting, and Dr Petrie Simpson, who saw her two days later, diagnosed a tumour with a twisted pedicle and sent her into hospital.

On admission her condition was seen to be grave; the pulse was between 130 and 140, and weak; the temperature 100°; and in addition to the abdominal condition, there was bronchitis and some enlargement of the thyroid gland. I saw her shortly after admission and decided to give her the chance of immediate operation, at which Dr Haultain assisted me.

On opening the abdomen a thin-walled cyst of a dark bluish-red colour was exposed. It was of an irregular oval shape, and grew between the layers of the broad ligament with the Fallopian tube stretched over it. Its pedicle had a half twist. The contents of the cyst consisted largely of fluid blood. The walls of the cyst show only a few small extravasations in the region of the pedicle. On removing the tumour it was noted that the

broad ligament contained an extravasation of blood. A round subperitoneal fibroid was removed from the upper part of the uterus. It was rather larger than a hen's egg; it was of a dark red colour, and on section shows the naked-eye appearance of necrobiotic changes. A larger fibroid tumour of the size of a child's head was found in the pouch of Douglas. It had a pedicle not much thicker than a pencil, which was easily tied off. No adhesions had formed around these tumours, and the operation was quickly completed. Before closing the abdomen two litres of salt solution were poured into the peritoneal cavity.

On the patient being put back to bed, the pulse was rapid (170) and feeble, and remained so in spite of hypodermic injections of strychnine and strophanthus and stimulant enemata. Her respiration was rapid, and much impeded by mucus in the air passages, and she sometimes coughed up a little muco-pus, but evidently had not strength to clear the bronchi.

Her condition somewhat improved on the following morning, and I hoped that she might come round; but during the day the pulse became more rapid, 160 to 170. The respirations rose to 50-54, and became more laboured. Her temperature rose to 104°, and death occurred thirty hours after operation.

The post-mortem showed that the cause of death was acute septic bronchitis of some days' standing, which had supervened on bronchitis with emphysema. Infection had taken place from the air passages, only the larger bronchi containing pus. The liver was fatty, and the spleen and kidney showed evidence of toxæmic changes, probably secondary to the lung condition.

Pelvic Organs.—There was no pelvic peritonitis. The bladder was markedly dilated with thin walls, pointing to over-distension, probably the result of the pressure of the tumour in the pouch of Douglas. The uterus was small. I should have mentioned that the patient had not menstruated for six years, the menopause having occurred at 34. On its fundus and posterior wall were small pea-like subperitoneal fibroids, and near them the

stumps of the tumours removed at the operation. The right tube and ovary were normal. The left side of the upper part of the broad ligament was tied off with a silk ligature, on the distal side of which there was some blood-clot covered with plastic lymph. The rest of the broad ligament was opened out by blood extravasation, and this extended upwards along the infundibulo-pelvic ligament into the cellular tissue along the course of the ovarian vein. The vein itself was apparently uninjured.

At the post-mortem, this extravasation along the course of the ovarian vein was the most striking feature. At the first glance the appearance suggested extensive varicocele; but closer examination showed that the black-beaded appearance stopped abruptly about 1½ inches from the point where the ovarian vein entered the renal vein, and that the beaded appearance was due to hæmorrhage into the cellular tissue beside the vein, which was apparently itself intact. This extravasation was continuous with one in the broad ligament; and the blood had evidently dissected its way in this direction instead of going towards the iliac fossa, or following the course of the round ligament.

The points of interest are—the occurrence of hæmorrhage on the proximal side of the twist in the pedicle, apparently from rupture of a vein in the broad ligament, and the peculiar course that the extravasation followed.

VIII. ABDOMINAL HYSTERECTOMY FOR INVERSION OF THE UTERUS; FATTY DEGENERATION OF THE INVERTED PORTION.

By A. H. Freeland Barbour, M.D.

While changes in the mucous membrane of the inverted uterus have been fully described, I can find no references to changes in the muscular wall. The following case is therefore worthy of record.

Mrs R., aged 37, iii.-para, admitted to Ward XXXV., 11th April 1905. Two months before admission, patient was delivered of a full-time child. The labour was difficult and instruments were used, as they had been in the two previous labours. All three children were born dead. In her last labour she lost a considerable quantity of blood. She had no pain during the puerperium, but for the first three days she was unable to pass urine, and it was not drawn off until the third day. When the doctor was doing this he informed her that the "womb was down." She herself did not notice anything wrong. Six weeks after her confinement she was informed that the "womb was inside out." During the time previous to admission she felt nothing specially wrong. There had been no hæmorrhage.

On admission, on vaginal examination, the pelvis was found to be justo-minor. In the vagina was a mass about the size of a golf ball, rounded and smooth, except at a few points where there was irregularity on the surface. No cervix could be felt. On bimanual examination under chloroform no fundus could be felt above the pubes, and the sound could not be passed up alongside the mass. An attempt was made to replace the fundus by pressure with the fingers in the vagina. This was partially successful, and then the cervix could be felt. It was fixed with volsellæ, and further pressure applied to the fundus, but no further reduction could be effected, and in two days the inverted uterus was projecting as far as before.

A week later she was again anæsthetised and the abdomen opened. After she was put in the Trendelenburg position a cup-shaped depression was visible in the floor of the pelvis, across which was a transverse slit with the tubes drawn into it. The posterior rim of the cup was incised through both thicknesses of the inverted wall. Pressure was again exerted on the inverted fundus from the vagina, and the incision was continued down into the cup until the inversion was completely undone by pressure from below. There was very little hæmorrhage

INVERTED UTERUS, SPLIT LONGITUDINALLY.

a. Exposed mucous surface. The extent of the fatty change in the wall is indicated at the fundus.

[*Face page* 174.

from the cut walls of the uterus. The wall of the uterus was now seen to be the seat of marked fatty degeneration, and it was determined to remove it. This was done by supravaginal hysterectomy. One ovary was left.

After the operation patient was extremely collapsed, and for the first twenty-four hours she suffered from severe shock, which was only controlled by frequent saline enemata. Her convalescence was slow, and was further retarded by an attack of shingles in the right thigh a week after operation. She was discharged well three weeks later.

The specimen (see Plate) consists of the uterus amputated above the cervix, together with the right tube and ovary. The posterior wall of the uterus is split from a point just below the fundus down to the level of amputation. This incision gapes when the uterus is in its normal state, but when the latter is inverted, which is readily done, the edges of the incision remain in close apposition. When the uterus is thus inverted the ovary and fimbriated end of the tube remain outside the peritoneal cup.

The uterus measures 5·5 cm. in length. The circumference at the line of amputation, which formed the constricting ring, is 5 cm., while the circumference at the widest part of the fundus touching both tube corners is 12 cm. This accounts for the impossibility of manual reduction.

The exposed mucous surface is smooth and hard, pale in colour, and shows no hæmorrhages. The tube openings are visible and patent.

The peritoneal surface is thrown into longitudinal folds and there is a deposit of fat visible under it, while the superficial layers of the muscular wall also have undergone fatty change.

Microscopic Examination of Uterine Wall.—The exposed surface of the uterus is devoid of mucous membrane. On the surface is a condensed layer of fibrous tissue without any

epithelial covering. At places there is some *débris* of broken down cells. There is no indication of the formation of a stratified squamous epithelium such as has been described in some cases. No glands are present.

Under this free surface the muscle fibres are degenerated, the nuclear staining being faint. Between the fibres there are many small blood extravasations, some recent, others older, and only represented by blood pigment. Beyond this area the muscle fibres are healthy to the depth of the line of large vessels in the uterine wall. On the peritoneal side of these, however, the fibres are extremely degenerated; nuclear staining is absent, and the protoplasm has undergone fatty change. This becomes more marked towards the peritoneal surface until immediately under it the muscle is entirely replaced by fat. The peritoneal coat is thickened in places by a deposit of lymph.

It is difficult to explain why the degeneration has especially affected the outer third of the muscular wall. Greater compression might cause such a change in the wall in the neighbourhood of the inversion ring; but this cause does not operate at the fundus, in the bottom of the inverted cup.

This fatty degeneration of the uterine wall has an important bearing on the treatment of inversion.

Küstner was the first to advocate and carry out the operation of hysterectomy in the treatment of cases of inversion in which manual reposition failed. He operated by the vaginal route, gaining access to the peritoneal cavity by a transverse incision through the posterior fornix. The finger was then passed into the inversion cup and the posterior uterine wall divided longitudinally until the inversion could be undone. Piccoli also devised an operation along the same lines.

Dührssen operated also by the vaginal route, but incised the anterior fornix and split the anterior wall of the uterus. Other operators have followed him.

In 1901 Dr Haultain described at our Society an operation which he had performed for a case of chronic inversion, in which he opened the abdomen and incised the posterior wall of the uterus. His method was followed in the case just recorded. In his paper, Dr Haultain points out that the abdominal route has three advantages over the vaginal. (1) The incision in the uterus is reduced to a minimum. (2) Traction on the round and broad ligaments may help reposition. (3) The uterine wall can be more accurately sutured, and hæmorrhage more efficiently controlled.

The present case adds a further argument for the abdominal route, for the fatty change here present—though it must be of rare occurrence, as I can find no references to it in the literature —would more easily escape notice in the vaginal operation.

The abdominal route allowed one to see plainly the condition of the uterine wall, and to decide on hysterectomy as being the best if not the only thing to be done. It is doubtful whether, with the walls in this condition, healing by first intention would have occurred. And even had it occurred, the degeneration of the uterine wall would have been a cause of ill-health, and might have produced complications in pregnancy.

The President said the Society was fortunate in having these interesting cases brought before them, along with Dr Barbour's valuable comments on them. The abdominal route seemed to be the best way to reach and treat such cases. Personally he had had no experience of the operation for inversion of the uterus; indeed he did not recollect having met with inversion in either his hospital or private practice. The Society thanked Dr Barbour for his interesting cases.

IX. HERNIA OF THE UTERINE ADNEXA, WITH A PERSONAL EXPERIENCE OF SEVEN CASES.

By E. Scott Carmichael, M.B., F.R.C.S. (Edin.), Gynæcologist, Royal Public Dispensary; Assistant Surgeon, Royal Hospital for Sick Children, Edinburgh.

The greater frequency with which radical cure of hernia has recently been performed has enabled surgeons to investigate more intimately the anatomical and pathological conditions present, not merely as regards the nature and extent of the peritoneal protrusions, but also with regard to the contents of the protrusions.

Nothing is more instructive than the results found from a series of operations on young children; and having had the opportunity of operating upon a considerable number of young females for hernia, I am enabled to place on record several cases of hernia of the ovary and Fallopian tube.

Inguinal hernia in the female is associated with hernia of the uterine adnexa in a very large proportion of cases. One may expect to find this association in from 25 per cent. to 30 per cent. of inguinal herniæ operated upon in the female. Out of 23 of my own operations for inguinal hernia in the female, the ovary or Fallopian tube or both were present in seven cases.

Of a total number of 76 cases of inguinal hernia operated upon in female children in the Edinburgh Royal Hospital for Sick Children, 30 had contents in the hernial sac; and of these 24 contained the ovary, Fallopian tube, or both. They therefore form the most common content of female inguinal hernia found at operation, and are intimately associated anatomically with the peritoneal protrusion, the so-called canal of Nuck; and relatively, as compared with the frequency of any one content of the hernial sac in the male, occur in a larger proportion of cases of inguinal hernia than any other viscus. Although

isolated cases are from time to time recorded as being of rare occurrence, one must therefore consider ovarian hernia as one of the, if not the, commonest as compared with hernia of any other abdominal viscus.

Of the seven cases I operated upon, three were bilateral, three were right-sided, and one was left-sided. If we consider them with regard to the age of the children, it is convenient to divide them into three periods:—Two occurred in babies under 1 year of age, three in girls under 5 years of age, and two in girls under 12 years of age. Relatively speaking, therefore, the frequency of ovarian hernia is greatest in the first year of life, as compared with any other, and tends to diminish, in proportion to the frequency of hernia, the older the subject.

Thus on examining a more extended record of cases of inguinal hernia in the female operated upon in the Royal Hospital for Sick Children (and I am indebted to Mr Stiles for the use of his cases), the following facts were elicited:—That in 21 cases of hernia under 1 year the adnexa were present in 13; in 21 cases under 5 years, 7; and in 34 cases under 12 years, 2. In young babies the subject of inguinal hernia the uterine adnexa may therefore be looked for in over 60 per cent. of cases.

Nature of Hernia.—In considering this hernia, it is perhaps well to define more accurately what is meant by hernia of the uterine adnexa. The degree of hernia varies to a considerable extent, from that of a complete descent of the ovary and Fallopian tube with the broad ligament into the canal of Nuck, to any partial protrusion of one or both of these organs. The slightest degree is a condition in which the ovary and Fallopian tube lie at or just within the abdominal ring, where the attachment of the infundibulo-pelvic ligament is found on the posterior wall of the sac, and where, by following this up, the ovary and Fallopian tube are found and can be pulled into the sac. In order to reduce the contents satisfactorily it is necessary in all

these degrees of hernia to divide the attachment of the infundibulo-pelvic ligament to allow the ovary and Fallopian tube to pass back freely into the abdomen.

The more complete herniæ are the commoner the younger the child. Five of the above herniæ were complete, while in two the infundibulo-pelvic ligament alone was present in the sac, that is, the ovary and Fallopian tube were not present as far as could be made out by palpation, before operation.

Anatomical Conditions: Canal of Nuck.—This peritoneal projection has been the subject of considerable controversy, from those on the one hand who regard it as a normal protrusion present in the fœtus and disappearing shortly before childbirth, and those who believe it to be an abnormal protrusion, not in any way analogous to the processus vaginalis in the male.

Duplay examined twenty-one female fœtuses at the ages of 4 and 5 months, and was unable to find any trace of the canal of Nuck. His results have been supported by Heegaard, Biermer, and others. On the other hand, Waldeyer and Schäfer describe the canal as if it were a normal condition found in the female fœtus.

The relationship of this canal to the part of the parietal peritoneum forming it, is an interesting one. From the frequency with which the ovary and Fallopian tube are present in the sac, and from an examination of their anatomical position in the sac, one can undoubtedly say that the peritoneum most usually forming the sac is that part of the parietal pelvic peritoneum giving attachment to the broad ligament, and more especially that part of it which passes from the infundibulo-pelvic or suspensory ligament of the ovary. This fold of peritoneum is intimately attached to the posterior wall of the canal of Nuck in these cases, and is frequently very short, so that the ovary and Fallopian tube are almost sessile (see later).

In the case of hernial sacs in which the ovary and the tube are not present at operation, this fold is seen, and by traction

upon it the ovary and Fallopian tube may be pulled into the sac. The thickness of the peritoneum varies very considerably, as it does in the corresponding conditions in the male; but, speaking generally, one is inclined to consider that it is as a rule much thicker than the processus vaginalis of the male. Its length is not great in children, and I have not seen it extend as far down as the labium majus, as it does in the corresponding condition in the adult female. Although the canal does not as a rule exceed an inch to an inch and a half in length in children, its length within certain limits has a distinct bearing on the presence of the adnexa within it. Thus the longer the canal the more likely are they to be present for obvious reasons. That the length or even presence of the canal is due to the round ligament or lower part of the inguinal ligament is again a matter of some interest.

The Round Ligament.—What then is the relationship of the round ligament to the canal of Nuck? Martin describes it as being inserted into the apex of the canal of Nuck, while Waldeyer considers that the round ligament is surrounded only partially by the peritoneum of the canal of Nuck. In many of the cases operated upon the round ligament was seen distinctly passing up towards the apex of the canal; many of the fibres appeared to spread out over the canal, but the majority seemed to form a band which passed behind and internal to the sac, though apparently intimately associated with it. One must rather agree with the view held by Waldeyer.

It seems probable that the descent of the ovary, like that of the testicle, is due to the inguinal ligament, and that its non-development or slower growth may lead to an excessive traction on the ovary and its peritoneal connections, and one cannot help considering that the frequent association of the two conditions and their intimate connection must be due to one and the same cause, namely, the shortness of the round ligament.

Artificially a canal of Nuck may be formed, and this I have

proved to my own satisfaction on the cadaver in adults, by excessive traction on the round ligament, whereby a funnel of peritoneum may be pulled into the inguinal canal almost entirely surrounding the round ligament. This can be demonstrated on the living subject during the performance of the Alexander-Adams operation. One must therefore consider that the canal of Nuck and the inguinal ligament are intimately associated, and that the presence of the former depends on excessive traction resulting from the imperfect development or shortness of the latter.

Ovary and Fallopian Tube.—In examining a considerable number of children post-mortem, I have been much struck with the marked degree of variation in the position of the ovary under normal conditions. The ovary may lie high up near the lower end of the kidney on the psoas muscle, its long axis being vertical, and may be situated anywhere intermediate in position between this and the internal abdominal ring. It most frequently lies in the true pelvis behind the uterus, but not infrequently in the false pelvis.

When the Fallopian tube and ovary are situated in the canal of Nuck they are not easily displaced like a coil of intestine, for although mobile to a certain extent they are more or less fixed. When lying well down in the sac, frequently they cannot be replaced until their peritoneal attachment to its posterior wall has been divided. If one draws upon this peritoneal attachment as present in an empty canal, the Fallopian tube comes first into view and then the ovary.

Lockwood, in describing the relative position of the ovary and Fallopian tube in the canal in a case recorded by him, in which there was torsion of the adnexa, seems to believe that the ovary occupies a lower level than the Fallopian tube.

I am unable to support his view from my own experience. The Fallopian tube in my cases lay lower down in the sac than the ovary, and generally internal to it, that is, nearer the middle

line. That this is the more common relationship is supported by the fact that the Fallopian tube may be present in the canal without the ovary, while in none of my own cases was the ovary present without the tube. In two patients, aged 6 months and a year and a half respectively, the Fallopian tube alone was present in the sac, considerable traction being required to pull down the ovary.

While the anatomical position of the ovary and tube shows such marked variation within the normal, the same variation may be noted as regards the macroscopic appearances of the ovary. This is of importance when one has to consider the question of the advisability or not of removal of the ovary when present in a hernia. An examination of a large number of ovaries in children post-mortem has convinced me that it is extremely difficult to judge clinically as to its normal condition or otherwise.

The ovary varies in shape markedly from that presenting the appearance of an elongated flattened band, to one which is oval, thick, and bean-like in shape. The surface may be smooth, presenting no signs of follicles, or, again, may be irregular with follicles of considerable size and almost cyst-like in appearance. These varieties are seen in different individuals of the same age as well as in those of different ages.

With such variation under normal conditions one must consider carefully the advisability of removal of the herniated organ, as has been so frequently recommended. I have not felt justified in removing the ovaries in any of the above cases, and therefore am unable to discuss their histological characters.

That the ovary continues to functionate in its abnormal position is shown by cases recorded by Scheutzer, Engelmann, and others, whilst ectopic pregnancy in the hernial sac has been recorded by Balin, Gofey, and others.

That pathological changes are of frequent occurrence in herniated ovaries is what might have been expected. Acute

and chronic inflammatory changes are most common. Torsion is not infrequent, and such a condition is described by Lockwood and others. In most of the cases of torsion recorded the patients have been infants under one year, the symptoms presented being those characteristic of strangulation. Cystic degeneration and malignant changes in later life are described. None of these possibilities, however, seems to me to warrant removal of the ovary in its abnormal position any more than under normal conditions. Again, in many cases of hernia of the ovary in adults the function of the organ has not been destroyed, as shown by the occurrence of regular menstrual changes, pregnancy, etc.

Association with other Malformations.—Several authorities record the association of hernia of these organs with maldevelopment or non-development of them or the other genital organs. Cazeaux seems to have reported the first case in which the uterus was absent. Puech has collected 88 cases with 33 abnormalities, and Bitzako 91 cases with 39. The uterus is in these cases either absent or under-developed, or such conditions as uterus unicornis, bicornis, and false or true hermaphrodism are present. In none of my cases was any abnormality seen, although for obvious reasons the condition of the uterus could not be ascertained, and in most cases recorded it would seem that this was not investigated until adult life.

Femoral Hernia.—This occurs much less commonly than the inguinal variety as a congenital condition, and I have not operated on a single case of this form in a child. Most of the recorded cases of hernia of the ovary and Fallopian tube into the femoral canal have occurred in women in adult life. According to Deneux, the proportionate frequency of this hernia to that of the inguinal variety is as 1 to 9. Englisch records 9 to 27 inguinal cases, and Bitzako 17 to 91 inguinal cases.

In conclusion, these cases seem to show that in young female subjects inguinal hernia is associated in a very large percentage

of cases with displacement of the adnexa. It is striking that although femoral hernia is so common in the adult female, prolapse of the adnexa is relatively uncommon in this anatomical position. These considerations largely support the view that the association of the two conditions in the inguinal variety is due to a developmental and congenital cause.

References.

1. Biermer.—*Centralblatt für Gynäkologie*, 1897, p. 233.
2. Birnbaum.—*Berliner klinische Wochenschrift*, 1905, No. 21.
3. Carmichael.—*British Medical Journal*, February 3rd, 1906.
4. Duplay.—Thése, Paris, 1865 (see *Archiv für klin. Chirurgie*, 1904, Bd. 74).
5. Heegard.—*Archiv für klinische Chirurgie*, 1904, Bd. 74, s. 424.
6. Hilgenreiner.—*Berliner klinische Wochenschrift*, 1906, No. 11.
7. Holmes.—Thesis, University of Edinburgh, 1906.
8. Jopson.—*Annals of Surgery*, 1904, No. 40.
9. Lockwood.—*British Medical Journal*, 1896, No. 1.
10. Martin.—*Die Krankheiten der Eierstöcke.*
11. Mumby.—*British Medical Journal*, 1896, No. 1.
12. Macé et Moncany.—*Bulletin de la Société d'Obstétrique de Paris*, 1905, No. 4.
13. Pfannenstiel.—*Veit's Handbuch der Gynäkologie*, Bd. 3, Hft. 1.
14. Puech.—*Archives de Gynécologie*, 1878.
15. Schäfer.—"Embryology," *Quain's Elements of Anatomy.*
16. Stiles.—*British Medical Journal*, October 1904.
17. Waldeyer.—*Centralblatt für Gynäkologie*, 1896 und 1898.

The President said Mr Carmichael's paper did not lend itself easily to discussion. It was a very interesting communication and would be a valuable addition to the Society's *Transactions.*

MEETING VII.—JUNE 13, 1906.

Professor Sir HALLIDAY CROOM, *Vice-President, in the Chair.*

I. The following gentlemen were elected Ordinary Fellows of the Society:—Samuel Davidson, M.D., Kelso; Wm. F. Godfrey, M.B., C.M., 46 Cumberland Street, Edinburgh; H. St John Randell, M.B., C.M., 2 Thirlestane Road, Edinburgh; K. Dadaphoy, L.R.C.P. & S.E., 5 Roseneath Street, Edinburgh.

II. *Professor Kynoch* showed—(*a*) TWO SPECIMENS OF CARCINOMA OF BODY OF UTERUS. (1) Patient, æt. 56, unmarried, never pregnant; menopause ten years ago; uterine hæmorrhage, two months' duration; examination of curettings showed the condition to be adeno-carcinoma; removed by vaginal hysterectomy fourteen months ago. (2) Patient, æt. 62, had several children; menopause fifteen years ago; recurrence of hæmorrhage six months before coming under observation; uterus enlarged to size of large orange, from extensive involvement of the wall by malignant disease; uterus removed by abdominal panhysterectomy. (*b*) MALIGNANT ADENOMA OF THE BODY OF FIBROID UTERUS. Patient, æt. 49, consulted Professor Kynoch in October 1902, on account of hæmorrhagic discharge off and on for nine months. Previous to this she had been regular, and had three months' amenorrhœa in 1901; three miscarriages at the fourth month twenty years ago. On examination there was found an interstitial fibroid extending to midway between the pubes and umbilicus, and felt bulging slightly into the posterior fornix. As he did not think the hæmorrhage excessive enough to warrant hysterectomy, he advised against operation. A year later, however, she had much-increased bleeding, for which he took her into hospital and performed supravaginal hysterectomy, for what he supposed to be a bleeding interstitial fibroid. She left the hospital greatly improved in appearance,

but nine months later began to go downhill, and eighteen months after operation died with all the signs of malignant abdominal disease. The uterus, which had been labelled bleeding interstitial fibroid, was now carefully examined for him by Professor Sutherland, who had no hesitation in recognising the condition as malignant adenoma of the endometrium. (*c*) SARCOMATOUS DEGENERATION OF UTERINE FIBROID. Patient, æt. 48, menorrhagia for eleven years, and more or less continuous loss of blood for two months before coming under observation. Had two normal pregnancies. On admission to hospital her weak condition consequent on the loss of blood rendered operative treatment impossible; she was put on treatment (rest, iron, and hot douches) for two months. In April 1905 supravaginal hysterectomy was performed for an interstitial fibroid, reaching upwards to 1½ in. above the umbilicus. She made a satisfactory recovery, and remained well till about three months ago. There were now large nodules to be felt in the pelvis; a tumour the size of a child's head in front of the forearm and another under the right jaw. On careful examination of the tumour by Professor Sutherland the true condition was found to be sarcomatous degeneration, and not mere necrotic changes in the endometrium as supposed at the time of operation. (*d*) COMPLETE PROLAPSUS UTERI. Patient, æt. 45, had complete prolapse for two years without receiving any treatment for the condition. She was admitted to hospital collapsed, with all signs of acute peritonitis. No attempt was made to replace the prolapsed mass protruding at the vulva. Death twenty-four hours after admission. On post-mortem examination pus was found in front of and behind the uterus, the source of the infection probably being extensive fetid ulceration on exposed part of the prolapsed uterus. (*e*) LEFT TUBE, from a case of repeated ectopic gestation. Patient, æt. 36, had five full-time healthy children, at intervals of about fifteen months. Six and a half years after the birth of the last child (in November 1902), he

operated on her for tubal abortion, removing the right tube and corresponding ovary. A year and a half ago she had her sixth full-time normal confinement. She nursed for nine months, then remained regular. The menstrual discharge due in beginning of April was described as "scanty," and at the corresponding period in May last she presented all the signs and symptoms of left-sided ectopic pregnancy. At the operation a huge clot was found hanging from the fimbriated extremity of the left tube, and there was a considerable amount of blood-clot removed from the pouch of Douglas.

Dr Freeland Barbour showed—(*a*) A UTERUS CONTAINING TWO MUCOUS POLYPI removed for hæmorrhage after the menopause. The patient was 54, and the menopause occurred at 47. She had irregular bleedings, and the uterus was curetted. The pathologist's report on the scraping was that it might be sarcomatous. On removing the uterus two mucous polypi were found in its cavity. That was an extremely rare condition, especially at that time of life. The hypertrophy of the uterus was interesting, as the patient was past the menopause. (*b*) FOUR FIBROID UTERI removed for symptoms at or after the menopause. Fibroids were considered to cease from being a source of danger after the menopause, yet he had got four consecutive cases of trouble after the menopause. All four of these persons had had children. The first two were from patients aged 48 and 49 respectively, and the indication for operation was bleeding. They were about the menopause. The second pair were aged 51 and 64, and were past the menopause. The first of these had had three children, and the tumour had grown rapidly during the past few months. There was no hæmorrhage, but it was removed because of continuous growth. The second was fifteen years past the menopause. She was seized with abdominal pain and diarrhœa. On examination a tumour was discovered, which was soft and felt like an

ovarian tumour, coming close up to the uterus. He considered that twisting of the pedicle might have given rise to the symptoms. She had had no symptoms previously; and there were eight children. The fibroid was œdematous, and the uterus so friable that it was difficult to control the bleeding, as the ligatures always cut out.

IV. *Dr Lamond Lackie* showed—(*a*) A TUBO-OVARIAN CYST from one side and a PAROVARIAN TUMOUR AND HYDROSALPINX from the other. In the first the tube and ovary were continuous, while in the second the tube and ovary were distinct from the tumour. The patient had had four children. She was twice curetted for menorrhagia in Cape Town. He discovered the cystic swellings and removed them three weeks ago. The patient menstruated for two days last week; probably it would entirely cease. (*b*) A SMALL PYOSALPINX removed from a patient confined three months ago. In the puerperium she developed a huge swelling and a high temperature. The condition was considered to be a perimetritic effusion, which subsided under treatment, but a mass was left on one side of the pelvis, probably a tube. He removed the tube from amongst a mass of adhesions. Pus was present in it, and probably the original perimetritis was due to the escape of pus from the ostium abdominale. (*c*) AN INTRALIGAMENTARY FIBROID removed on account of pain from a patient who suffered from severe arthritis deformans. She was bed-ridden and had put off the operation for years, but it was eventually done because of the onset of severe abdominal pain and bladder symptoms. Many adhesions were found over the tumour, so it was shelled out of the broad ligament, leaving the adhesions *in situ*. She had been much relieved already, and it was possible that the removal of the fibroid might affect her joints beneficially. (*d*) A RAPIDLY GROWING SOFT ŒDEMATOUS FIBROID TUMOUR removed from a spinster of 30. A year ago she began to have hæmorrhage, so that she became blanched and had all

the signs of severe loss of blood. At the operation the tumour bled profusely and became very pale. It was a soft œdematous fibroid, and was of only one year's growth.

V. POST-PARTUM OVARIOTOMY.

By J. A. C. Kynoch, M.B., F.R C.P. (Ed.), Professor of Obstetrics and Gynæcology, St Andrews University.

It is generally agreed that when an ovarian tumour is found complicating pregnancy it should be immediately removed. Delay in operating increases the risk to the mother, and the chances of disturbing the course of pregnancy are likewise less the earlier the condition is recognised and treated. The literature on this subject is almost endless, as shown, for example, by a glance at the index of the *Centralblatt für Gynækologie* during the past ten years. What strikes one on a study of those contributions is the endeavour to break the record of previous results, and to prove how safely ovariotomy can be performed during pregnancy. Without going into details of the literature, it may be mentioned that McKerron has collected 480 cases with a mortality of 5 per cent., which could be reduced to 2 per cent. by excluding fatal cases where other causes might account for the unfavourable result. Those figures far surpass the results in cases of non-interference, where, for example, in a collection of 720 the mortality was as high as 21 per cent. Figures might also be quoted to prove the beneficial results to the child by early operation.

Of four cases of ovariotomy during pregnancy, I have operated on one at the third month, on two at the fourth month, and on one at the seventh month. In the first three abdominal ovariotomy was performed, and in the case at the seventh month a dermoid tumour was removed by vaginal section. The course of pregnancy was not disturbed in any of

the cases, all going on to full time. Torsion of the pedicle was present in the three abdominal cases, but only in one did it give rise to acute symptoms demanding immediate operation. In the other cases the unusual size of the abdomen led to the diagnosis of the condition. In the case at the seventh month attention was directed to the condition by pelvic discomfort. The nature of the tumour was a dermoid in two of the cases; in one it was a multilocular cyst, and in the other papillomatous. In the case where there was extreme torsion of the pedicle, all the usual symptoms of that condition were present, accounted for by extreme hæmorrhage into the cavity and cyst wall. I have not met with a case of ovarian tumour complicating actual labour, a subject which has recently been discussed here by Dr Haultain. My object in bringing this short communication before the Society is to report three cases of ovariotomy during the puerperium, a subject which has received but scant attention in comparison with the question of ovariotomy during pregnancy and labour.

Although it is undeniable that pregnancy, labour, and the puerperium may be gone through without any mishap in the presence of an ovarian cyst, yet the dangers associated with axial rotation of the pedicle, rupture, and suppuration of the cyst are specially prone to occur during the puerperium, thereby increasing the risk to the patient. This being so, the advantages are obvious of ante-partum ovariotomy being performed so as to prevent the greater dangers of post-partum operation. Labour being one of the commonest causes of suppuration of the cyst, whether the result of genital tears or of intestinal origin, accounts for the frequency of the condition during the puerperium. Gelter has reported 21 cases where, in spite of normal labours, suppuration of the cyst had occurred and led to fatal peritonitis. Gottschalk has emphasised the importance of the bacillus coli as setting up infective changes, resulting in the formation of pus and gas within the cyst. The chances of

axial rotation are likewise greater during the puerperium, because of the laxity of the abdominal wall permitting greater mobility of the cyst, and lowering of the abdominal pressure at the time of the emptying of the uterus. As the result of the frequency of infective changes set up in the ovarian cyst during the puerperium, most cases of this condition have been mistaken for puerperal sepsis, resulting in non-recognition of the true cause of the febrile symptoms and almost invariable death of the patient. Aust Lawrence reported ten such cases sent to hospital diagnosed as puerperal peritonitis.

The following are the notes of my cases:—

CASE I.—J. S., aged 19, was delivered normally of a full-time healthy child on 20th February 1902. After the birth it was noticed by the midwives in attendance that the abdominal swelling had not disappeared, which was supposed to be accounted for by the presence of a second child. Their patience diminishing and their anxiety increasing, they sent the case to hospital. On admission the patient stated that she had noticed a swelling of the abdomen some months before pregnancy had occurred, but throughout the pregnancy she had had no discomfort. On examination the temperature was 99°, pulse 100. The abdomen was uniformly distended by a cystic swelling, the circumference at the umbilicus being 41 inches. There was no œdema, and except for deficient urinary output the various systems were normal. She remained quite comfortable with normal temperature and pulse during the first week, when she had an evening rise of temperature to 100°, culminating in a rise of 104°, with pulse 136, on the twentieth day after confinement. On account of her unsatisfactory condition ovariotomy was performed, when a large multilocular cyst arising from the left ovary was removed. The main cyst was full of fetid pus, and the pedicle was twisted but not very tightly. The tumour was adherent to the liver and transverse colon. The operation

was completed in the usual way, and the abdominal cavity irrigated with saline solution. The patient made a straightforward recovery.

CASE II.—Mrs McD., 24 years of age, was delivered of a full-time healthy child, fourteen days before admission to hospital. This was her second confinement, and the child was born before assistance reached her. She remained in bed for eight days, when she tried to resume her domestic duties, but as she had severe pain in the lower part of the abdomen she was compelled to return to bed and summon medical aid. On admission to hospital she looked very ill. The temperature was 103°, and pulse 126. There was a cystic tender swelling extending in the middle line to 1 inch above the umbilicus. The urinary and other systems were normal. Immediate operation showed that the swelling was a right-sided multilocular ovarian cyst with extreme torsion of the pedicle, the twist involving the uterus. As a consequence the cyst wall was gangrenous in places, and others showed well-marked hæmorrhages. The operation was completed in the usual way, and recovery was satisfactory.

CASE III.—Mrs S., aged 37, was confined ten days before coming under my observation. Beyond supposing that she was unusually large during pregnancy, she made no complaints until after her confinement, when I saw her on account of the persistence of the abdominal swelling. She was perfectly comfortable, with a normal temperature and pulse. On examination the abdomen was found to be uniformly distended to the size of a full-time pregnancy by a cystic swelling. Physical signs pointed to the condition being a unilocular ovarian cyst. Her condition giving rise to no special discomfort, I deferred operating till the end of the fourth week after her confinement, when I removed a unilocular cyst of the left ovary, unaccompanied by adhesions or any signs of inflammatory change. Her recovery was satisfactory.

The first two cases, one of suppuration and the other gangrene of the cyst, show how necessary immediate operation becomes in a puerperal woman known to have an ovarian tumour, and exhibiting unfavourable symptoms. The third case shows, however, that immediate operation was not imperative, and that in the absence of unfavourable symptoms operation may perhaps with advantage be delayed until the patient has completely recovered from the effects of her past confinement.

Professor Sir Halliday Croom said he remembered few papers more interesting than the present one. In a long experience of ovariotomy he had seen only two cases done after labour was over. It was very rare to meet with cases such as Professor Kynoch had described; the diagnosis was also very difficult.

Dr Freeland Barbour thanked Professor Kynoch for the clear and lucid way he had brought forward two classes of cases; and also the good result of operations so soon after delivery, the first being three weeks, and the second a fortnight after labour. He (Dr Barbour) heartily congratulated him on his success in those operations, as the first two were very difficult cases.

Professor Kynoch thanked the Fellows of the Society for their kind remarks on his paper.

VI. A CASE OF HETEROPLASTIC OVARIAN GRAFTING, FOLLOWED BY PREGNANCY AND A LIVING CHILD. QUERY—WHO IS THE MOTHER?

Communicated by Professor Sir J. Halliday Croom.

Mrs H. W. was sent to hospital by her physician on 1st Feb. 1902. She was 21 years of age; began menstruating at 15, and stopped menstruating at 19. Previous to its cessation, the

function had been of average character. She was married at the age of 18, became pregnant soon after, and had a miscarriage at the third month. During the two years previous to her admission to hospital she had suffered from the common menopausal symptoms of pelvic pain, headache, and hot and cold "flushes." These symptoms had steadily increased in intensity, and were most marked at the times when the monthly flow should have appeared.

A diagnosis of cirrhotic ovaritis was made, and the patient asked to stay in hospital until an opportunity occurred of obtaining grafts from the ovaries of some other patient to replace her own ovaries, which were to be removed.

On 11th February, Dr B. operated upon Mrs P. for prolapse of the uterus. Mrs P. was 33 years of age, and the mother of three children. Her ovaries were normal except for the slight congestion common to prolapse cases.

While Dr B. was operating there was removed from Mrs P. ovarian tissue in the form of a wedge-shaped ribbon—enough to be incidentally beneficial for the congestion of Mrs P., while at the same time grafts were obtained for Mrs W. The grafts were placed in physiological saline solution isotonic with human blood, and maintained at the temperature of 100° F.

Mrs W.'s abdomen was then at once opened by a short median incision and the ovaries removed by Tuffier's angiotribe. This method of removal was chosen in order to ensure the complete removal of all ovarian tissue.

After the removal of each ovary of Mrs P., a slit was made through the peritoneum of the broad ligament on either side, parallel with the oviduct, and dorsal to the original seat of the ovary. Into each slit was placed a segment of ovary from Mrs P., about one-half inch long, and one-fourth inch wide. A single catgut suture was placed in such a way as to hold each graft in place. Each graft was placed with its cut surface

in contact with the cut surface of the broad ligament, in order that nutrition might be maintained through the lymph circulation pending the formation of new capillaries. The uncut surface of the ovarian tissue was allowed to project into the free peritoneal cavity, to facilitate the free escape of ova.

The uterus and tubes of Mrs W. appeared quite normal. The ovaries removed from Mrs W. were examined by a pathologist, who reported that they were cirrhotic, distended by many small cysts, and containing no formed Graafian follicles.

Mrs W. and Mrs P. made uninterrupted recoveries from their operations.

Four months after the grafting Mrs W. menstruated, the period lasting for five days. She did not again menstruate until five months later, November 1902, when she was unwell for one day. In the following month she again menstruated for four days, and thereafter the flow became regular, lasting four or five days at each period.

In March 1906, Mrs W. was delivered of a female child, weighing seven and a half pounds. Both mother and child did well, and the mother had a good supply of milk.

Dr Freeland Barbour said that such a question could not be answered off-hand, though it raised many points of interest. He asked whether it was the desire of the second patient to have children, and whether the operation was done with her consent. From the medico-legal point of view, he thought a lawyer would require an exploratory incision to satisfy himself that all the original ovarian tissue had been removed, before giving an opinion.

Dr Keppie Paterson considered the woman who bore the child acted only as an incubator for the ovum of the other woman. It had been fertilised in the body of the second

woman, but the life in the ovum was given to it by the first woman; so that the first woman was the mother of the life of the child. This seemed the biological aspect; but if the portion of ovary had been purchased by the second woman, the question would probably have quite a different aspect in law.

Mr Scott Carmichael said he had been carrying out some work on the subject in the laboratory of the College of Physicians. So far, he had devoted his attention to autoplastic grafts, removing the ovary and grafting it in some other place of the same animal. Work had been done by many investigators as to the changes that occur in the grafts. The results practically proved that the ovary degenerated to a certain extent, but not entirely, however. A fair amount of tissue remained which appeared to be normal, but it was difficult to say whether or not it could functionate. In his own work he had found that after ten months the ovarian tissue in the grafts was distinctly normal in parts. There were evidences of Graafian follicles. Drs F. H. A. Marshall and Jolly had also done work on the subject. They exhibited specimens at the Physiological Society showing healthy Graafian follicles in ovarian grafts. It was doubtful whether the ovarian tissue in the graft could exert its ordinary influence on the body and on the uterus. The uterus usually atrophied, though Dr Marshall claimed that the uterus did not atrophy in one case. His work was shortly to be published. With regard to the question of pregnancy after grafting, one case had been described and severely criticised. The crux of the whole matter was whether the ovaries had been completely excised. It was not always easy to be certain of its complete removal, as one might get ovarian tissue in the ligament of the ovary, as shown by Dauber, and unless it was removed one could not be certain all the ovarian tissue was excised. In regard to heteroplastic grafts, an Italian observer had shown that the age of the host had a distinct influence on the transplanted ovary. Young ovaries grafted in young

rabbits retained their embryonic characters. In rabbits about the menopause, they took on the characters of ovaries at that age. When transplanted into rabbits after the menopause, they underwent atrophy. These results pointed to the fact that, if the ovary lived, it had little influence on the host on which it was grafted. It was difficult to offer an opinion on the present case. He was inclined to think there must have been some ovarian tissue left somewhere. From experimental evidence he was doubtful of Mrs P. being the mother of Mrs W.'s child.

Dr Malcolm Campbell said that in the heteroplastic grafts done in the rat by Marshall and Jolly there was distinct evidence of fibroid degeneration. They had failed with heteroplastic grafts, but with autoplastic grafts they had been successful.

Dr Brown Darling said if Mrs P. were white and Mrs W. black, the question would be easier to answer.

Dr Michael Dewar considered the question difficult to answer. If *all* the ovarian tissue had been removed from the first woman, the ovum certainly came from the second woman, and consequently the child was hers. It was the result of her ovum. But if it was a question of inheriting money, the child being presumably the offspring of the father, but not of the mother (his wife), it was illegitimate.

Dr James Ritchie said that in view of the recorded cases in which pregnancy had occurred after both ovaries had been believed to have been entirely removed, it would be difficult to say whether the ovum in the case under discussion was from the grafted tissue. Supposing, however, that the ovum had proceeded from the grafted tissue, as it no longer belonged to the woman who supplied the graft, but had become an integral part of the woman who bore the child, therefore in the opinion of the speaker the child belonged to the woman who bore it.

Dr Church was of opinion that probably the whole of the ovarian tissue had not been removed at the time of the opera-

tion from the original patient, and that therefore she was more likely to be the real mother. It would, however, be interesting to watch the development of the child, and see what light any moral or physical traits of character might reflect on the child's maternity.

Dr Angus Macdonald inquired if the distinctive menstrual types of the two women were known. Dr Croom had mentioned that the second woman menstruated for five days some time after the operation. He thought it would help them if they had details as to their respective menstrual types previous to the transplantation, in order to decide whether the ovarian grafts had taken and continued functional or not.

Dr Barbour Simpson asked why the angiotribe was used specially? He considered it to be an instrument for crushing a pedicle.

Dr Macrae Taylor, referring to the medico-legal aspect, asked if it was not the case that a child was not recognised in law as existing until after the occurrence of quickening? That would affect the question of inheritance, because, if this were so, there could be no legal recognition of any mother but the one who gave birth to the child.

Professor Sir Halliday Croom said the question was, Who was the mother of the child—the woman who provided the ovum, or the one who gave the blood-supply? They must take it for granted that all the ovarian tissue was removed. No third ovary was found. His opinion was that the woman who supplied the ovary was the mother, and the child was a bastard. He held that when a man married a woman her ovaries belonged to him; and even after they were transferred to another woman they were still his. So the offspring of the second woman must be a bastard. He did not see how it could be otherwise. The second woman acted as a foster-mother. If the second had bought and paid for a piece of ovarian tissue which was then grafted, the legal question would be of a different nature.

That was the only recorded case. It would be very interesting to trace the characteristics and the features of the child. Great care was taken in the operation to remove all the ovarian tissue. The angiotribe was used.

VII. MALIGNANT ENDOCARDITIS DURING PREGNANCY, WITH AN ILLUSTRATIVE CASE.

By Sir J. HALLIDAY CROOM, M.D., F.R.C.P. (Edin.), Professor of Midwifery, University of Edinburgh.

MALIGNANT endocarditis, under which term I include all cases of severe acute endocarditis, whether attended by actual ulceration and loss of substance of the endocardium or not, is unfortunately only too well known in connection with the puerperal state. Puerperal infection is mentioned as a possible cause by all writers since the disease was identified, and a glance at the literature of the subject suffices to show how well founded this statement is. The disease itself is actually about three times as common in the male sex as in the female. But of forty-nine fatal cases occurring in the female, in the statistics of Kanthack and Kelynack, we find eight put down to puerperal infection—an average of rather more than 16 per cent. On the other hand, the occurrence of malignant endocarditis in pregnancy is a rarity. In his Goulstonian lectures on malignant endocarditis, Osler mentions four cases as having occurred in pregnancy. In addition to these, I have been able to find only two more cases, after an extensive, if not exhaustive, search through the literature.

The mode of onset, the symptoms, and the course of malignant endocarditis are all so diverse that it is not possible to draw a clinical picture that will fit every case. Two types are in general recognised—the typhoid type, and the intermittent, septic or pyæmic type. These again are subdivided into cardiac

and cerebral varieties, according as the predominant symptoms are cardiac or cerebral. Actually, however, we find cases which link these different types and varieties together by innumerable gradations.

The typhoid type is much the more common. In it the symptoms are irregular temperature, sweatings, great prostration with low delirium and somnolence; in short, a typhoid state.

In the pyæmic or septic type, which is that usually found in puerperal cases, there is practically an acute septicæmia, with rigors, high and irregular temperature, and sweatings. Occasionally the temperature curve is exactly like that of a quotidian or tertian ague.

In the cardiac group there may be found any and every variety of cardiac distress and failure. The symptoms of the cerebral group simulate closely those of meningitis.

Finally, in any of the forms symptoms of embolism may occur—hemiplegia, and infarction of the spleen, kidneys, lungs, etc.

The condition of the heart itself may be misleading. Murmurs may not be present at all. Or they may be heard in any area and of any variety. Systolic murmurs at the apex are perhaps the most common. The heart sounds are of course weak, especially the first, and there may be reduplication of the second. The pulse is usually weak and irregular.

It is obvious, therefore, that there is a wide field for error in the diagnosis of this condition. In particular, the differential diagnosis is from pyæmia, typhoid fever, and acute general tuberculosis.

From the first of these, pyæmia, it is not easy to diagnose the condition. They are more than closely allied. Malignant endocarditis is indeed, as Wilks has said, an "Arterial pyæmia." The occurrence of embolic symptoms of course clears up the diagnosis in any case; while the common irregularity in the temperature and the possible presence of cardiac pain are points

to be borne in mind in distinguishing the condition from typhoid.

The following is the record of a case of malignant endocarditis which occurred during my service in the Maternity Hospital last winter:—

Mrs B., aged 23, a primigravida, was admitted to the Royal Maternity Hospital, Edinburgh, on 16th November 1905; she was suffering from albuminuria and dropsy, and was five weeks from full term.

History.—Six years ago she had a severe attack of pneumonia. Since then she had suffered almost constantly from dropsy of her legs, with palpitations and breathlessness. When these symptoms became well marked, her menstrual flow ceased, and under rest and the administration of Blaud's pills, her condition markedly improved. When she became pregnant in March 1905, she was fairly well, having been at work as a domestic servant for the previous year; but during her pregnancy dropsy of the legs, with palpitation and shortness of breath, began to trouble her again.

On 5th October, when six months pregnant, she had a shivering fit, with intermittent pains in the back and abdomen, and vomiting. For the first time her face and hands became swollen. The attack passed off in a day or two, and afterwards she was not confined to bed; but her urine became less in quantity, and gave her pain whilst being passed; she passed urine about six times in twenty-four hours.

The patient had had no disturbances of vision or hearing, and no fainting. She occasionally had headache and vomiting, a so-called "bilious attack."

On admission, it was noted that the patient was a well-developed woman, of ruddy complexion, and well nourished. Her breathing was easy when she lay at rest, but became embarrassed on slight exertion. Her pulse was 78, regular, of good volume and moderate tension, and the arterial wall was

just palpable. Her temperature was 98·4° F. There was slight dropsy of the lower limbs, but none of the rest of the body. Her urine contained 2·2 grs. of albumen and 7 grs. of urea per oz. The specific gravity was 1017; no casts were found.

There was a blowing systolic murmur at the base of the heart well heard also in the tricuspid area; no murmur was audible in the mitral area.

The abdomen presented the appearance of an eight months' pregnancy, and the fœtal heart was heard distinctly.

Patient was comfortable and quite free from pain.

17*th November*.—In the morning, the patient had slight sickness and headache. During the day her temperature rose from 99° F. to 103° F. Her pulse was 126, but continued regular and of good amplitude. No change in the cardiac murmurs could be made out. The œdema became very marked, so that the outlines of the face were scarcely recognisable; there was fluid in the abdomen with œdema of the whole subcutaneous tissues; 28 fl. oz. of urine were passed during twenty-four hours. There was scarcely any perspiration although the patient was surrounded with hot bottles. She complained of nothing except slight headache.

18*th November*.—The dropsy was slightly less in the morning, and gradually diminished during the day. The morning temperature was 101·5° F., the evening 102·5° F. There was a painful, tender, erythematous patch on the upper part of the right thigh. The urine was about 30 fl. oz. per diem, and the analysis was as follows:—acid, specific gravity 1027, albumen 24·0 grs., and urea 8 grs. per fl. oz., a little blood, and a few epithelial casts. There was still very little sweating.

Examination of the heart and lungs showed no change. The percussion note over the abdomen was tympanitic as low down as midway between the umbilicus and the symphysis pubis.

Early labour-pains began in the afternoon, and gradually increased in severity.

19th November.—Patient slept fairly well. She vomited at 6 A.M. and at 10 A.M. The vomit was for the first time chocolate-coloured and contained blood; 30 fl. oz. of urine were passed in twenty-four hours, containing 10½ grs. urea per fl. oz.; on being boiled the urine became solid with albumen. The temperature fell to 101° F.; the pulse was 106, regular, and of good volume and tension. The dropsy had practically gone, and except for the labour-pains, patient was quite comfortable.

At 12.30 P.M., patient was examined; the os uteri was fully dilated, the head presenting. Chloroform was given, the membranes were ruptured, the forceps was applied, and labour was completed in half an hour. The child was small, and still-born; the placenta showed infarcts. The mother took the anæsthetic well, was sensible, and had a good pulse after labour. Pulse 96, temperature 100·4° F.

During the day patient was restless, but had no pain. She was frequently sick, and vomited: the vomit contained no blood. Her temperature rose to 102° F. in the evening; and her pulse (130) became irregular, especially in amplitude. She slept occasionally during the night, and the vomiting ceased; but the temperature rose, the pulse became more irregular, and dropsy became very marked. At 9 A.M. the pulse became imperceptible at the wrist, and at 10 A.M. the patient died in a state of extreme cyanosis.

The treatment was directed mainly to obtaining free diaphoresis, diuresis, and movement of the bowels, to allaying the sickness, accelerating the labour, and in the later stages stimulating the heart.

Summary of Post-mortem Report.—"Septic endocarditis of aortic and mitral valves, which were the seat of a chronic endo-

carditis. Acute myocarditis, chronic adherent pericarditis. Acute toxic changes in all the organs. No evidence of septic infection of the uterus."

The post-mortem examination was made twenty-four hours after death, by Dr Lyon. The body was in a condition of general "rigor mortis," and presented a degree of universal anasarca such as one rarely sees in the post-mortem room. On incising the skin and subcutaneous tissues clear serous fluid welled freely from the sodden, œdematous tissues. The abdomen was very much distended, and the peritoneal cavity contained about 300 fl. oz. of clear serous fluid. The presence of this quantity of fluid in the peritoneal cavity exerted a degree of compression sufficient to cause collapse of the whole extent of the small intestine; the stomach, on the other hand, was enormously distended with flatus and fluid, being in a condition of acute dilatation, a condition which one may regard as the result of the compression and collapse of the small intestine, inasmuch as the free outflow of the stomach contents into the duodenum and small intestine was thereby prevented or at least hindered.

Examination of Thorax and Contents.—The anterior border of the left lung was firmly adherent to the anterior surface of the pericardial sac. The pericardial sac was completely obliterated, a condition of general adherent pericarditis being present. The pericardium was bound to the posterior surface of the sternum by firm, fibrous adhesions.

Both pleural cavities were completely filled with clear, straw-coloured, serous fluid. There was no fibrous adhesions between the pleural surfaces, and there was no evidence of recent pleurisy.

The bronchi were not enlarged, and there were no tuberculous foci. The apices and anterior borders of both lungs were emphysematous, and the lower lobes were in a condition of recent collapse. The other lobes were extremely œdematous.

and congested, but no pneumonic consolidation could be anywhere detected. There were no areas of infarction. The bronchi were filled with watery mucus, and the mucous membrane showed a condition of chronic venous congestion.

Heart.—The congestion of the pericardial sac has already been noted. The right cavities were dilated and filled with a mixture of post-mortem and yellow gelatinous agony-clot. The left cavities, especially the left ventricle, were also dilated and contained a less amount of a similar clot. The endocardium of all the cavities and the intima of the blood-vessels were deeply blood-stained. The pulmonary and aortic valves were competent, but the mitral and tricuspid orifices were slightly dilated. The cusps of the aortic and mitral valves showed a slight degree of fibrous thickening, and both were the seat of an acute endocarditis, the vegetations on the mitral cusps being larger and more numerous than those on the aortic cusps. The left ventricle was much dilated, and its wall was thin, pale, and flabby, being evidently in a condition of acute myocarditis.

Abdominal Organs.—The liver was extremely soft and friable, and presented a uniformly pale yellow colour; the appearance indicating the presence of a very diffuse necrosis rather than fatty degeneration.

The spleen was much enlarged and was very soft. On section it appeared exactly like a mass of recent blood-clot. There were no areas of infarction, recent or old.

To the naked eye the kidneys presented the picture of a very acute nephritis. The superficial and deep cortex was enormously swollen and of a pale yellow colour. The capsule stripped freely, the branches of the renal artery were not thickened, and there was no macroscopic evidence of any chronic change. There were no infarcts.

The stomach was acutely dilated. There were no areas of infarction, but there were numerous petechial hæmorrhages in

the mucous membrane. The intestines showed nothing abnormal beyond collapse, and pallor of their coats.

The suprarenal glands showed numerous hæmorrhages in the medulla.

The mucous membrane of the bladder was healthy. There was no evidence of cystitis.

The fundus of the uterus lay in the intertubercular plane, and its wall felt soft and flabby. On incising the organ the cavity was found to contain a small amount of recent blood-clot, and the lining membrane, after removal of blood-clot, presented a healthy appearance with the exception of several small areas in the placental site, which, to the naked eye, appeared necrotic. The areas were removed for microscopic and bacteriological examination. The odour of the uterine contents was not offensive. From the naked-eye appearances one would say that the uterus had not been the seat of a septic infection. There was no laceration of the cervix. Some of the veins in the broad ligament contained a recent thrombus.

Bacteriological and Microscopic Examination of the Tissues.—Sections of the affected valve segments of the heart show the presence of numerous staphylococci in the adherent vegetations and in the tissues of the segments.

The muscle fibres of the heart wall show cloudy swelling and in places fragmentation. There is œdema of the interstitial tissue, with here and there aggregations of lymphocytes.

The liver shows a very diffuse necrosis of its cells throughout the whole extent of the lobules. There is very little fatty degeneration. There has been a pre-existing fine cirrhosis, but the portal spaces are not infiltrated with leucocytes.

The kidneys show a very intense acute catarrhal nephritis There is no evidence of precedent kidney change. No micro-organisms can be discovered in any of the organs. In the necrotic-looking pieces of tissue removed from the uterus no

micro-organisms can be discovered, the tissues being infiltrated with altered blood pigment.

That the infection in this case took place before delivery was rendered clear no less by the clinical history than by the post-mortem examination. The patient was eminently susceptible to such an infection, for two conditions were present which markedly predispose to malignant endocarditis. She had chronic valvular disease of the heart, a condition present in more than 75 per cent. of cases of this disease. There was a well-marked history of chlorosis, an important predisposing factor, and this was no doubt aggravated by the physiological anæmia of pregnancy.

The course of disease was excessively short. The disease was of the "cardiac" type, which usually runs a course of weeks or months. The attack of 5th October was perhaps only nephritic, for the patient was tolerably well in the interval, and her temperature was normal for fully twenty-four hours after her admission to hospital. At the same time the possibility of its marking the first onset of the acute endocarditis must not be overlooked. A study of the course of a number of such cases shows many instances in which there were long periods of complete latency of all symptoms. Thus Dreschfeld (*Brit. Med. Journal* for 1887, vol. ii., p. 998) records a case where for five months the only symptom was a slight occasional rise of temperature. This was followed ultimately by two successive hemiplegic seizures from embolism, and death. The autopsy showed the presence of an acute septic but non-ulcerative endocarditis, evidently dating from the time when the temperature began to rise.

The disease, as far as could be determined, however, lasted only for four days. This rapidity of course is the rule in cases occurring in pregnancy; and usually abortion occurs before the end. In this case there were three reasons in particular for its

early termination. First, there was the repeated strain thrown upon the enfeebled heart by the frequent attacks of nausea and vomiting. Secondly, there was the malnutrition consequent upon the peculiar condition of the stomach and intestines. The increased intra-abdominal pressure appeared to have caused collapse of the intestine, with secondary acute dilatation of the stomach. Probably this condition began on the day after the patient's admission to hospital. The abdomen was then distended not only by the accumulation of dropsical fluid, but by the presence within it of the pregnant uterus. The acute distension of the stomach would thus account for the persistent sickness, and for the excessive abdominal tympanites observed on the 18th of November. Inanition, lasting for three days, must have hastened the end. Thirdly, the strain thrown upon the heart by labour was followed by a rapid increase in the severity of the symptoms. For the twenty-four hours before labour the temperature, pulse, and general condition of the patient improved; after labour they steadily became worse, and within twenty-four hours death ensued from acute cardiac failure.

It is worthy of note that the typical symptoms of the disease were not present. There were no rigors or sweatings—indeed, there was a distinct diminution of perspiration; there were no cerebral symptoms; there was no pain in the joints; there was no dyspnœa or palpitation; and there were no embolic phenomena. The absence of these would not appear to be associated with the fact that the woman was pregnant, for some cases are recorded in which for the first few days no indication of the disease was present except an elevated and irregular temperature; thereafter symptoms developed, and it is probable they would very soon have done so in this patient but for her sudden death.

For purposes of diagnosis the cardiac murmurs were as usual not of the first importance, for slight changes were

obscured by the œdema of the chest wall, the respiratory embarrassment, and the adherent pericardium.

The infection was staphylococcal. Frequently the mode of entrance of the organism is obscure; in this case it may have been through a small ulcer on the inner side of the right thigh, or it may have been one of those rare cases of primary idiopathic endocarditis—so called, doubtless, merely because the mode of entrance of the organisms is unknown.

Let me now glance very briefly at some of the other recorded cases of malignant endocarditis in pregnancy.

In the *Charité Annalen* (Berlin), 1878, Litten records a case of ulcerative endocarditis in pregnancy. The patient had previously had acute rheumatism and had acquired chronic endocarditis. In the eighth month of her sixth pregnancy she had an apoplectic seizure, and was paralysed over the entire left side. When Litten saw her, seventeen days later, the right side of the heart, and the spleen were enlarged. Albuminuria and retinal hæmorrhages were present. On the following day she was spontaneously delivered of a living child. There was moderate bleeding. This was followed by the sudden onset of paralysis of the right side, and death.

At the autopsy septic emboli were found in both sides of the brain, affecting the motor areas. Fresh and old infarcts were found in the spleen and kidneys. The uterus and annexa were normal.

Another case is reported in the *Bulletin de la Société Anatomique de Paris*, in 1879, by Guyot. Patient was 37 years old, and had not had rheumatism or any other disease which would predispose to endocarditis. She was in the fifth month of her first pregnancy. She complained of feverish attacks and rigors followed by sweating. The only objective sign was a double murmur audible in the præcordia, lasting through the period of the whole cardiac cycle, and Guyot was unable to determine whether it was endocardial or pericardial in origin.

Quinine was given in large doses, and after two days the patient was delivered of a five months' fœtus. The abortion was attended with considerable hæmorrhage, and the patient gradually sank, and died a week later.

The autopsy showed a large recent vegetation on the mitral valve. The spleen and kidneys showed infarcts at least a month old, corresponding to a time when there were no subjective symptoms. The condition of the uterus and annexa is not specified.

Guyot considered that the disease "originated under the influence of pregnancy."

In the *Lancet*, 20th January 1894, p. 155, Dr Burgess records a case of malignant endocarditis in a married woman aged 30 years, who was six months pregnant. The chief interest lay in the obscurity of the case from the first, and in the fact that it differed in its symptoms from the description of recorded cases. The prominent symptoms were pains of a lightning character, shooting in paroxysms from the inside of the knee to the base of the abdomen, and a fixed pain at the symphysis pubis. There was also after a time paralysis of the bladder. The temperature was 101° F., and a murmur was apparent from the first in the mitral area, substitutive in character. Miscarriage took place on the seventh day, but as the sequelæ gave rise to no fresh symptoms, it was not regarded as a complication. On the twelfth day embolism of the left cerebral artery occurred, followed by rapidly increasing coma and death on the twentieth day. The remarkable points were:—

(1) The murmur, which was present from the first, without any previous history of rheumatism.

(2) The nervous phenomena, which were the distinct features.

(3) The temperature, which was of the continuous type.

(4) The difference from the ordinary forms of pyæmia, cerebral, cardiac, or septic.

(5) No occurrence of emboli took place till the twelfth day, and there were no signs of renal or splenic embolism the whole time.

(6) The peculiar absence of perspiration.

In the *Medical Chronicle* (Manchester) for 1896, p. 14, Kelynack records a case of a woman, aged 29, who was brought to hospital with severe cardiac dyspnœa, and died shortly after admission. The autopsy showed pericardial adhesions; sclerosis of the mitral valve; ulceration of the valves and chordæ tendineæ, which were also covered with coarse vegetations. The uterus contained a five-six months' fœtus. Placenta and uterine walls were normal. Vagina contained considerable leucorrhœal discharge.

The mere recording of these cases is sufficient to show the wide variety of symptoms that may be presented. Dr Burgess's case has the one point in common with my own case, namely, "the peculiar absence of perspiration." This is distinctly an odd circumstance, for, as Osler says, "sweating is a very frequent symptom, and is worthy of special notice, from the peculiarly drenching character, second only to ague, and usually far beyond the average mark of phthisis or pyæmia." What the explanation of such lack of sweating is, it is not possible to say.

One cannot agree with Guyot that the disease originates under the influence of pregnancy, unless that statement is to be taken in a very limited sense. Pregnancy may no doubt act as a predisposing factor in virtue of the slight anæmia which it induces, of the increased impurity of the blood owing to the oxidation products of the fœtal metabolism circulating in it, and of the general strain thrown upon the whole maternal organism. But beyond this limited extent, pregnancy cannot be looked upon as a factor in the production of endocarditis, and the occurrence of this disease is to be regarded in the light of a rare and accidental complication.

VIII.—SOME OF THE PHYSIOLOGICAL CHANGES IN THE MATERNAL ORGANISM DURING PREGNANCY, AND THEIR SIGNIFICANCE.

By H. Oliphant Nicholson, M.D., F.R.C.P.Ed., Assistant Physician to the Royal Maternity and Simpson Memorial Hospital; Obstetric Physician, New Town Dispensary, Edinburgh.

During the course of pregnancy numerous and important physiological changes occur in the maternal organism. These changes are most peculiar, and rarely follow any definite order; sometimes they appear almost immediately after conception, at other times they do not develop until the later months.

The phenomena commonly associated with the state of pregnancy may be called physiological, and it is usual to speak of pregnancy as a physiological process, still it is only in very exceptional instances that no obvious deviation from normal health during the nine months of gestation is apparent. While most women show great adaptability in meeting the additional demands arising from the altered conditions incidental to pregnancy, still, in many cases, there are evident indications of a breakdown, and then symptoms of an intense blood intoxication may appear, which, if unchecked, may culminate in very grave pathological conditions, seriously endangering life.

In some women, then, whose organs are in a normal condition, the additional demands made upon the physiological functions seem to be satisfactorily compensated for; in others the strain of pregnancy is too much, and to the failure of one or other organ to perform its functions adequately may be attributed the chief complications that arise. In this connection one must always take into account the undetermined personal factor—by this I mean it to be understood that the manner in which any woman reacts to pregnancy must depend very largely upon her own special temperament, and upon the

condition of her various metabolic organs—the so-called "organs of defence." It is again the question of the seed and the soil, and the nature of the soil is the factor that cannot be determined until it is tested. Hence, when the seed, in the shape of pregnancy, falls upon a healthy soil, as may be found in a woman who has been previously healthy and whose important metabolic and eliminating organs are sound, a series of phenomena develop, fairly constant both in the order in which they appear and also in their character. The pregnancy, under such conditions, will pursue a more or less physiological course without the appearance of symptoms of serious toxæmia. Under other circumstances, however, when pregnancy occurs in a woman whose various defence organs are, for some reason or other, incapable of increased work, it is evident that untoward symptoms will develop. There will be inefficient metabolism, and subsequently imperfect excretion of substances which are more or less toxic in character. What precise symptoms will arise in any given case cannot be predicted, because one does not know the nature of the soil in which the pregnancy is implanted; it is impossible to know what organs are likely to be overtaxed in their duties. It must always be borne in mind, too, that even when poisonous substances are manufactured owing to faulty metabolism, the organism is supplied with many resources which enable it to deal with toxins and render them innocuous. As a rule, it is only when renal action ceases, or is greatly diminished, that one can safely say the other parts of the defensive mechanism will soon be overburdened, and that serious complications will occur.

There are certain physiological changes that take place in the cardio-vascular system as a result of pregnancy.

1. The vascular area is increased in consequence of the development of the uterine blood-vessels.

2. The quantity of the blood is increased, especially during the second half of gestation.

3. The quality of the blood is altered; there is relatively more water; there are more white corpuscles, while the fibrin and extractive matters are increased. The red corpuscles, the hæmoglobin, and the albumin are diminished.

4. The systemic and pulmonary veins become greatly overfilled, and this condition of matters is often apparent at the very commencement of pregnancy. Sometimes in the first few weeks the veins of the legs become overfilled and painful, at all events long before the uterus has risen high enough to press upon either common iliac vein. Marked pulsation in the veins of the neck—external and internal jugulars—is also present in many cases very early in pregnancy, and this symptom is infallible evidence of dilatation of the right side of the heart. I have frequently noted the appearance of pulsation in the jugular veins as the result of a pregnancy of a few weeks' duration; indeed, I now regard this sign as one of some value in the diagnosis of early pregnancy. James Mackenzie[1] has directed attention to the fact that there is a tendency to œdema of the lungs in the course of normal pregnancy. This condition I have frequently found, and it points to an engorgement of the pulmonary circulation. The tension in the pulmonary vessels is greatly increased. I wish particularly to emphasise the importance of these remarkable changes in the venous circulation—this tendency to overfilling of the veins, quite early in pregnancy. The significance of this alteration in the circulation has not been sufficiently appreciated, for there is obviously some other explanation than the mechanical pressure of the enlarged uterus to account for it. The matter will be referred to later.

5. The heart gradually becomes enlarged during pregnancy. Numerous observers have carefully investigated the question of the influence of normal pregnancy upon the maternal heart, and yet there is no unanimous verdict of opinion. Larcher, who

[1] *Brit. Med. Journ.*, London, 1904, October 8.

made one hundred and thirty autopsies on women who succumbed to puerperal fever in the Paris Maternity Hospital in 1825 and 1826, asserted that the left ventricle became markedly hypertrophied in pregnancy. More recent contributions to the subject tend to prove that, although some hypertrophy of the whole organ may occur, yet the enlargement is mainly due to dilatation of all the cavities, and more especially of those of the right side. This view is quite in accordance with the circulatory phenomena present during the course of pregnancy, for the heart at this time certainly cannot perform additional work without overstrain. The pregnant woman cannot, as a rule, exert herself with the same freedom that she possessed before conception; therefore one can hardly regard any hypertrophy of the heart which is present as compensatory. Indeed, there is really a distinct inefficiency of the organ as a whole, and whether hypertrophy of the left side occurs or not, what certainly does occur, and generally quite early in pregnancy, is dilatation of the cavities of the right heart.

6. The kidneys become enlarged, and the urine is altered in composition. With the exception of the chlorides, the solids are all diminished in quantity. Hence the urine of the pregnant woman, normally, has a specific gravity considerably lower than that of the non-pregnant. Albumin may appear in the later weeks of pregnancy in about 2 per cent. of cases. Some regard this as a physiological albuminuria; it is safer, however, to look upon all pregnancy albuminurias as pathological.

7. The thyroid gland, liver, and spleen become enlarged and heavier. Of all these physiological changes incidental to pregnancy, I wish, in the first place, to consider the enlargement of the thyroid gland. The hypertrophy of this gland during pregnancy is a well-established fact, and the ancients recognised its occurrence. The exact nature of the enlargement was unknown until 1899, when Lange[1] published his

[1] *Ztschr. f. Geburtsh. u. Gynäk.*, Stuttgart, 1899, Bd. xi., s. 34.

important paper on the thyroid gland in relation to pregnancy. Lange pointed out the precise significance of the enlargement of the gland during pregnancy, and showed that it took place in response to a call for an increased supply of thyroid secretion. Thus, when he gave thyroid extract to pregnant women who showed the hypertrophy, the gland rapidly diminished in size, when treatment was stopped, the gland almost immediately began to enlarge again. Pregnancy puts an extra strain on the thyroid, and the gland enlarges in order to meet this strain. When artificial secretion—in the form of thyroid extract—is supplied, the strain upon the gland is relieved, and it again resumes its normal size. On this theory Murray[1] has shown that progressive thyroid enlargement in young women—simple goitre—can be cured by the administration of thyroid extract. Such enlargements of the thyroid occur, as they do in pregnancy, when there is a temporary call for an extra supply of secretion to meet some derangement of metabolism, associated with rapid growth or with certain changes in the activity of the generative organs at the time of puberty.

It is, then, a very important and suggestive point, that for certain reasons, not yet clearly understood, a larger supply of thyroid secretion is needed in the pregnant than in the non-pregnant state; hypertrophy of the thyroid gland is thus a physiological condition during pregnancy.

On the supervention of pregnancy, the metabolic processes of the body are, of course, greatly increased, but, in spite of this, the metabolism throughout the pregnancy is, in most cases, maintained in a state of efficiency. When one considers how greatly the previous conditions of a woman must be altered in the course of a first pregnancy, the wonder is that the processes of general metabolism do not more often show indications of breaking down; the explanation is to be found in the fact that there is increased thyroid activity in normal pregnancy.

[1] *Edin. Med. Journ.*, 1900, August.

The active thyroid gland supplies a secretion which is essential to the maintenance of the normal metabolic round, and if the secretion be either deficient in quantity or impaired in activity the complex processes of nitrogenous metabolism will not go on normally, and certain characteristic symptoms will arise.

Pregnancy seems to predispose to a special condition of toxic poisoning; the condition of pregnancy favours a toxæmia which is peculiar to the pregnant woman. Most authorities are agreed that the toxæmia arises as the result of faulty metabolism, and it leads to the development of certain clinical symptoms which are now well recognised—high arterial pressure, headache, giddiness, vomiting, and, if still further developed, to albuminuria, suppression of urine, and convulsions (eclampsia).

It is generally held that the toxic substance or substances are metabolic in origin, and the precise disturbance of metabolism which gives rise to them seems to be definitely associated with the pregnant state—that is to say, we do not find quite the same train of symptoms appearing in any other pathological condition. There are now many reasons for believing that a close relationship exists between the thyroid gland system—thyroid and parathyroids—and the conditions which sometimes give rise to the toxæmia of pregnancy, culminating in eclampsia.

It seems probable that the call for increased thyroid secretion occurs at the very commencement of pregnancy, and the gland then gradually begins to hypertrophy so as to meet the additional demand. In normal pregnancy the enlargement does not become obvious till about the sixth month in primiparæ, though in multiparous women it appears somewhat earlier. In the early months of pregnancy there is, therefore, some degree of thyroid inadequacy. It seems worth while to consider some of the changes that occur in the maternal organism during pregnancy in the light of a thyroid inadequacy, the more

so as it is not improbable that the occurrence of some of the complications of pregnancy, such as albuminuria, eclampsia, etc., may be ascribed to this cause.

I shall shortly indicate some points which seem to suggest that this idea is worthy of consideration.

In the first place, with regard to the blood changes in pregnancy, which I have already mentioned, precisely similar changes are produced after removal of the thyroid gland in animals. It is not unreasonable, therefore, to suggest that in early pregnancy these alterations in the blood are connected in some way with a thyroid insufficiency.

To come next to the cardio-vascular phenomena which develop during pregnancy, some of the changes that take place in the maternal circulation at this time—dilatation of the right side of the heart and overfilling of the systemic and pulmonary veins—are very remarkable and very difficult to explain. There is a paradoxical state of matters in connection with the heart of pregnancy. One may find a slow and full radial pulse, quite consistent with a hypertrophy of the left ventricle, in combination with a large pulsation in the jugular veins, giving infallible evidence of dilatation of the right side of the heart. This is a remarkable combination of circulatory phenomena; in a recent communication,[1] I attempted to provide a reasonable explanation of it by assuming that there was some powerful vaso-constricting substance circulating in the blood as a result of pregnancy, that this acted only on the systemic circulation, and that hence the blood from these vessels was squeezed into those of the lungs, and tended to produce an engorgement of the capillaries there. On this view it is possible not only to understand why the left ventricle should undergo some hypertrophy, but also to explain the significance of the overfilled veins and dilatation of the right side of the heart.

[1] *Journ. Obst. and Gynæc. of British Empire*, 1905, January.

In order to understand how these circulatory phenomena can be explained in terms of thyroid inadequacy, it will be necessary to open out the question of the interdependence of the internal secretions. Increasing importance is being attached to the inter-action of the internal secretions, and investigation in this direction may lead to the unravelling of many obscure diseases.

As regards the systemic arteries and arterioles, there is abundant clinical and experimental evidence to prove that their calibre is profoundly influenced by the internal secretions of the suprarenal and thyroid glands. Suprarenal extract contracts the arterioles very greatly, partly through the vasomotor nervous system and partly by acting directly on the muscular coat of the vessels themselves. Nothing is so extraordinary about its action as the smallness of the dose sufficient to do this; $\frac{1}{800}$ gr. will constrict the whole arteriole field. The thyroid secretion, on the other hand, has been proved to influence the arterioles in entirely the opposite way. The active principle of the secretion is a specific vaso-dilator, and Oliver[1] has shown that it enlarges the calibre of the arteries in the human subject.

It may be assumed, then, that under normal conditions, apart altogether from the influence of the vasomotor centre, a balance is struck between these two internal secretions which results in a certain arterial tone. In various pathological states it is certain that this balance becomes greatly disturbed, and the type of circulation which develops under such circumstances often clearly indicates which secretion is overacting, or is being insufficiently antagonised. A proper equilibrium can in many cases be re-established by supplying to the tissues some of the deficient secretion in artificial form.

Thus in the disease known as myxœdema the arteries are hard and in a state of contraction, while in Addison's disease

[1] *Pulse-Gauging*, London, 1895, p. 84.

they are soft and relaxed. In the one case there is a thyroid insufficiency; in the other, an inadequacy of the suprarenal capsules. Thyroid extract cures all the symptoms of myxœdema, and suprarenal extract brings back the vascular tone in Addison's disease, though it does not invariably benefit the condition in other respects. Oliver has likewise shown that suprarenal extract, taken by the mouth, produces a general diminution of the radial calibre.

Our knowledge, then, of the influence of the suprarenal and thyroid glands respectively upon the arterial calibre has shed some new light upon the circulatory changes of pregnancy, and in several communications I have suggested that the suprarenal secretion itself is the vaso-constricting principle which exerts an exaggerated influence upon the cardio-vascular system at this time. The internal secretion of these glands either becomes too active, or its normal action on the blood-vessels is not sufficiently counterbalanced, owing to a deficiency of the thyroid secretion. Hence a prolonged continuance of arterial and arteriole contraction results.

Recent experimental work by Brodie[1] on the action of adrenalin upon the vascular system lends support to this view. It now seems possible to understand some of the hitherto inexplicable circulatory phenomena—dilatation of the right heart, overfilling of the veins, tendency to œdema of the lungs—which have been observed to occur at the very commencement of pregnancy, long before the addition of the placental circulation to the field of work supplied by the maternal heart can possibly operate as a cause. Brodie's observations are of the utmost importance in the interpretation of these early circulatory features occurring in physiological pregnancy, and here also may be found the clue to the mode of production of some of the well-known phenomena associated with the kidney of pregnancy, and with puerperal eclampsia.

[1] *Lancet*, London, 1902, vol. i., p. 804.

Adrenalin causes a large rise in the systemic blood-pressure, and this is due chiefly to constriction of the peripheral arterioles. It also acts upon the heart, whose output of blood is nearly doubled. Brodie showed that under the action of adrenalin the pulmonary blood-pressure rose to nearly double its original height. The adrenalin acts upon the blood-vessels through the vasomotor nervous system, for injection of the drug directly into the systemic vessels causes an immediate contraction, amounting almost to complete closure; while, on the other hand, direct injection into the pulmonary vessels results in a dilatation, and hence in a markedly increased rate of flow—an exactly opposite effect. In this way the very interesting and important conclusion is arrived at, that there are no vaso-constrictor fibres to the pulmonary vessels. Thus the internal secretion of the suprarenal glands powerfully contracts all the systemic arteries and arterioles which are supplied by vaso-motor nerves, and the blood contained in them is driven into the pulmonary vessels, which, having no vasomotor nerve-supply, are not simultaneously contracted. These vessels, then, become overfilled, and the blood-pressure within them is greatly increased. For this reason suprarenal preparations are contra-indicated in the treatment of hæmorrhage from the lungs.

W. B. Drummond [1] has studied the histological changes produced by the injection of adrenalin on some of the glandular organs of the rabbit. Adrenalin produces great congestion of the viscera, and the most suggestive and important fact is that death is due to an acute œdema of the lungs, which is often accompanied by great congestion of these organs. Drummond ascribes these inflammatory changes in the lungs to the toxic influence of adrenalin. This influence is most distinctly seen in the liver and kidneys; upon these organs adrenalin appears to act as a protoplasmic poison. In the kidneys the cells of the convoluted tubules are chiefly affected, and in the liver the

[1] *Journ. Physiol.*, Cambridge and London, 1904, vol. xxxi., No. 2.

cells of the central zone are the first to succumb. These changes in the liver are very similar to those which have been described in eclampsia.

Here are some points which are at least highly suggestive, not only in relation to the early circulatory changes in pregnancy, but also to the toxæmia which sometimes accompanies this state. It is evident that the suprarenal secretion, while causing constriction of all the systemic arteries and arterioles, acts in exactly the opposite manner upon the pulmonary vessels, with the result that they tend to become engorged with blood. Under its action the whole venous system becomes overfilled, and the cavities of the right heart become dilated. These changes, curiously enough, are precisely similar to those which take place in the maternal circulation with the occurrence of pregnancy, and I believe they can be ascribed to a temporary deficiency of the internal secretion of the thyroid, which allows the secretion of the suprarenal capsules to exert a too powerful influence on the blood-vessels.

The tendency to œdema of the lungs, which I have referred to as occurring even in the course of normal pregnancy, is an observation full of interest and suggestion in relation to what has been already said about the special action of the suprarenal secretion in bringing about an engorgement of the pulmonary capillaries and a congestion of the lungs; in eclampsia, these changes do advance beyond the first stage, and death is sometimes directly due to an acute œdema of the lungs.

The point, then, which I wish to bring out is this; that with the occurrence of pregnancy there is always a serious derangement produced in the relationship of the internal secretion of the thyroid gland to the secretion of the suprarenals. These two internal secretions are, as we have seen, antagonistic, and not only so with regard to their action on the blood-vessels, but also in their influence upon the metabolic processes of the body. Thyroid extract powerfully stimulates both metabolism

and elimination, increases largely the secretion of urine and the excretion of urea and other urinary substances. Suprarenal extract lowers the general metabolism, and may, as I shall mention later on, lead to a complete suppression of the urinary secretion. In the early months of pregnancy an additional supply of the thyroid secretion is called for to meet the requirements of increased metabolism, and then the suprarenal influence will become too pronounced. On this account the remarkable changes which develop in the maternal circulation can be explained—for they sometimes commence immediately after conception. Later on, in normal pregnancy, the balance between the two internal secretions becomes readjusted by the fact that the thyroid gland undergoes hypertrophy; then, as is well recognised, improvement in many of the troublesome symptoms of pregnancy occurs. If suprarenal overaction is not counterbalanced by thyroid hypertrophy, serious complications may arise. Lange observed pregnant women in whom this physiological enlargement of the thyroid did not occur, and noted what happened under such circumstances. Some clinical facts and experiments on animals have also indicated what abnormal symptoms may arise during pregnancy and the puerperium when thyroid hypertrophy is absent. Out of 133 pregnant women examined by Lange, 108 showed hypertrophy of the thyroid, and in 22 cases it was absent. In three instances it was doubtful. Of the 22 abnormal cases, 16 had both albuminuria and tube casts (pregnancy kidneys), which in six instances terminated in eclampsia. Of the 108 women who had a normal thyroid hypertrophy, only two had albumin in the urine, and in these there was a history of renal disease previous to pregnancy.

A study of the circulatory features observed throughout the course of normal pregnancy strongly suggests that there are periods during which one or other of these opposing internal secretions—thyroid and suprarenal—gains the upper hand.

During the past four years I have devoted a considerable amount of attention to this matter, and my observations lead me to state that one can divide pregnant women into two classes according to the type of circulation they present. These types of circulation seem to me to bear a very close relationship to the state of the thyroid activity; each type, when fully developed, is characterised by certain features which are readily recognised. Thus some women, chiefly multiparous, develop after the early months of pregnancy the kind of circulation which one may quite reasonably associate with a surplus of thyroid secretion. The pulse is greatly quickened—in some cases the rate never falls below 100 per minute—and is bounding in character; the arterioles of the skin are relaxed, giving rise to a subjective sensation of warmth, and jugular pulsation is usually well marked. There are evidences of dilatation of the right heart, without any noteworthy left ventricular hypertrophy. Commonly enough the veins of the legs are much over-distended and painful. You can form the best conception of this type of circulation if you compare it to that present in Graves' disease; the circulatory phenomena are identical in both cases. I have called this type in pregnant women the "Graves' disease" type, and it must be well-known to every obstetric physician. In these women there are evidences that the metabolic processes of the body are stimulated; the secretion of urine is largely increased, and the excretion of urea is not markedly diminished. Albuminuria is sometimes present, but it bears no grave significance; sometimes, also, there is a considerable amount of general œdema, which pits readily on pressure. Usually, however, these patients are thin. A point well worth noting is that in women in whom this type of circulation is fully developed, severe and troublesome hæmorrhage is specially liable to occur during the third stage of labour; the explanation of this may be that the normal suprarenal influence on the vessels is much diminished. The most interesting and

suggestive thing about such patients, so far as my experience goes, is that in them one need never have the least anxiety about the occurrence of eclampsia.

There are other women, most commonly primiparæ, who, after the mid-term of pregnancy, begin to exhibit symptoms which clearly indicate that the suprarenal influence on the arteries and arterioles is becoming too pronounced. Here, again, one can trace the gradual development of definite circulatory features, and, coincidently, various other symptoms make their appearance. When there is only slight or not too long-continued overaction of the suprarenal secretion, the pregnancy may still progress within physiological limits, but there are certain signs, now well recognised, which seem to mark the borderland between physiology and pathology. In extreme cases of this type one may note, in the later months of pregnancy, that the pulse-rate has fallen considerably, that the radial artery is firm and resistant, and that the blood-pressure is markedly raised. The superficial arteries are contracted. There are generally evidences of some dilatation of the right heart, for a venous pulse is frequently present, but the left ventricle may also undergo considerable hypertrophy. The metabolism, in these women, is markedly diminished, and is very liable to break down. The secretion of urine may be somewhat increased for a time, but it is of very low specific gravity, and the urea excretion is notably below the normal; later on the urinary secretion becomes scanty, and may be entirely suppressed. I may, in passing, direct attention to the very significant fact, that this kind of suppression of urine is found in association with an enormously high systemic blood-pressure, and firmly contracted arteries.

Albuminuria in most cases of this type is a symptom of serious import. Œdema is generally present, and is of a peculiar solid character, only pitting on firm pressure. This kind of œdema is frequently overlooked, because it is generally

supposed that the patients have simply put on fat during pregnancy; but it is really, in my opinion, an œdema very similar to, if not identical with, that present in myxœdema. It melts away under the action of thyroid extract in the same way as myxœdematous swelling does, and it is probably the result of a thyroid insufficiency. Most practitioners must have observed this kind of œdema in pregnancy, and must have recognised that it is very different from the soft œdema associated with cardiac or renal disease.

Patients in whom this type of circulation—which may be called the "myxœdema type"—is fully developed have no tendency to post-partum hæmorrhage; in them the suprarenal activity on the vessels is greatly increased.

It is patients of this kind, however, who are liable to develop eclampsia, and it is, therefore, a matter of great practical importance to recognise the occurrence of these circulatory changes and check their further development.

I have attempted to show how some of the physiological changes that occur in the maternal organism in early pregnancy may arise as a result of thyroid inadequacy. If the inadequacy is not made good later on by an enlargement and increased functional activity of the gland, then these physiological changes may become pathological, and complications of the gravest kind will ensue. I have already mentioned, as one of the physiological changes in pregnancy, that the kidneys become enlarged, and I might now indicate what I believe to be the nature of the so-called kidney of pregnancy, which, with its accompanying albuminuria, leads up sometimes to that hideous train of symptoms known as puerperal eclampsia.

There would seem to be little doubt that whatever the precise cause of the kidney condition referred to, it has its origin in some disturbance of the renal circulation, whereby the flow of the blood through the kidney is lessened. The quantity of urine secreted by the kidney in a given time is very closely

connected with the rate of the blood-stream passing through the organ; hence a spasmodic contraction of the renal arterioles by cutting off the blood-supply to the glomeruli, will greatly diminish, and may possibly completely arrest, the secretion of urine. It must be borne in mind that it is the pressure of blood in the glomeruli of the kidney that determines the amount of the secretion of urine; increased secretion does not depend entirely upon a high general blood-pressure. Anything that causes a contraction of the arterioles of the body generally will raise the pressure in the arteries, and will, at first, raise the pressure in the glomeruli also. Then there will be an increased secretion of urine. But if contraction of the arterioles becomes so widespread and pronounced that the smaller branches of the renal arteries are involved, then the pressure in the glomeruli may become so greatly reduced that the secretion of urine ceases entirely. This is what happens in eclampsia, and hence we find the combination of enormously high general blood-pressure with perhaps complete suppression of urine. It is surely evident that the only way to re-establish the secreting function of the kidneys under such conditions is to get blood to flow through them again. One way to do this is to dilate the renal arteries. This result may be brought about by the administration of various substances which produce a general vascular dilatation, and then the glomeruli will soon become flooded with blood, and diuresis will commence. Another method of starting the flow of blood through the kidney, and thus re-establishing the secretion of urine in eclampsia, has been suggested by Edebohls.[1] I refer to the operation of decapsulation of the kidney, and I fully recognise its value in cases where one cannot let the blood into the kidney through the renal artery. The splitting of the kidney capsule, by relieving the tension and

[1] *Journ. Am. Gynec. Soc.*, Phila., 1903, vol. xxviii.

letting some blood escape, may quite well restart the circulation through the kidney, and save an apparently moribund patient.

Now whether this abnormal constriction of the blood-vessels—including those of the kidney—which occurs in some cases of pregnancy, is brought about by suprarenal overaction or by some toxic influence, we do not know. So far as I am aware, we know of no toxin which can at all compare with the internal secretion of the suprarenal glands as a constrictor of the arterioles and capillaries. Normally, I believe, the thyroid secretion is the opposing influence which safeguards the renal circulation from dangerous overaction of the suprarenals; but in some cases of pregnancy in which there is a thyroid insufficiency, it seems quite possible that such an overaction does occur. In this way the production of the symptoms of eclampsia would be adequately accounted for.

Here then you have the rationale of my suggestion to use thyroid extract to re-establish the flow of urine in eclampsia, and you will understand why I insist on employing very large doses in order quickly to counteract the abnormal suprarenal action on the arteries. The arterioles must be relaxed so fully as to alter the type of circulation from one of intense vaso-constriction (myxœdema type) to one of extreme vaso-dilatation (Graves' disease type). Thyroid extract is the ideal vaso-dilator for this purpose, but it must be given in very large doses—30 to 60 grs. at a time—so as to produce symptoms of "thyroidism" as rapidly as possible. Then the renal vessels seem to relax, and urine is again secreted; but in some cases a large flow of urine does not result for several days. Morphine, given hypodermically and in a sufficiently large dose ($\frac{1}{2}$ to 1 gr.), is probably the most powerful and prompt vaso-dilator we possess, and in severe cases I have always used this remedy in the first instance, and then followed up with thyroid. If eclampsia is treated medically, I think the combination of

these two remedies provides a very successful means of rapidly re-establishing the secretion of urine.

In the presence of actual eclampsia, then, I employ these large doses of thyroid, and the remedy is used mainly for its vaso-dilating action. If much larger doses were given, I believe the results would be still better. The hypodermic injection of the juice squeezed out of a sheep's thyroid would be the best way to produce rapid effects. Macnab[1] obtained a striking result by dissolving the dry extract in saline and infusing the solution under the mammæ; and thyroid may be given in this manner *per rectum* to a comatose patient. I wish to emphasise the fact that thyroid is not a dangerous remedy in eclampsia; there is in this disease the same tolerance to thyroid as pain gives to opium. Eclamptic patients, when convulsions are present, likewise exhibit a remarkable tolerance to morphia.

From what has been already said, it will be gathered that, quite apart from the treatment of actual eclampsia, there should be a wide field for the use of thyroid extract in the treatment of many conditions connected with pregnancy and the puerperal state, which are almost certainly associated with defective metabolism. Thyroid may then be used to stimulate the metabolic processes, and for this purpose small doses (5 to 20 grs. in the twenty-four hours) are sufficient. At the same time the diet should be restricted to milk and other articles containing no animal proteid. In the therapeutics of pregnancy, one of the most striking things is the remarkable influence of an exclusive milk diet in the prophylaxis of eclampsia, and the explanation of the success of this treatment is to be found, I believe, in the relation of nitrogenous food to the thyroid secretion. Proteid food uses up too much of the thyroid secretion, and this form of food also yields very little iodine, which substance is essential to the gland for the manufacture of iodothyrin.

[1] *Journ. Obst. and Gynæc. of British Empire*, 1904, November.

In the course of pregnancy such symptoms as persistent headache, vomiting, and diminished secretion of urine, may occur, and these are properly regarded as being due to some toxic condition. Patients who suffer in this way do not in all cases develop eclampsia, but they generally feel very ill and low-spirited. I have given thyroid extract to a very large number of such cases—sometimes for many weeks at a time—with complete safety, and always with most beneficial results. The mental depression soon disappears, and the other symptoms are removed. I am forced to the conclusion that this remedy sometimes supplies an important want to the mother during pregnancy. I have treated some cases of hyperemesis gravidarum with thyroid with most gratifying results; and it has recently been shown that other complications of pregnancy, such as chorea and melancholia, can be definitely controlled by the use of this substance.

I have brought forward, in a rather disconnected way, some evidence which supports the view that thyroid insufficiency in pregnancy may be responsible for certain physiological changes that occur in the maternal organism, and I have also attempted to show that there is probably an intimate relationship between inadequate thyroid function and certain pathological conditions which develop during pregnancy, such as "pregnancy kidney," albuminuria, eclampsia, chorea, and other nervous diseases.

I hope I have directed attention to some points which may be suggestive to others, and which may assist in elucidating the riddle of puerperal eclampsia.

THE "BYRTH OF MANKYNDE."

(Its Author and Editions.)

By J. W. Ballantyne, M.D., F.R.C.P. (Edin.), F.R.S. (Edin.), Lecturer on Midwifery and Gynæcology in Surgeon's Hall, and in the Medical College for Women, Edinburgh; Physician to the Royal Maternity Hospital, Edinburgh.

The *Byrth of Mankynde* is perhaps the most interesting work on Midwifery in the English language. It must be admitted that an earlier manuscript work, written in English and dealing with the same subject, has been discovered; it must also be allowed that it is in great part a translation of Rhodion's (or Rösslin's) *De Partu Hominis;* yet the *Byrth of Mankynde* retains its place of honour at the head and source of English obstetric literature, and has profoundly influenced the practice of the art of midwifery in these islands for more than three centuries. The perusal of its pages, so beautifully printed in the old black letter, gives the reader a graphic word picture of the *vie intime* of the sixteenth century obtainable from no other work; the study of its history and of the identity of its translator or editor supplies problems of considerable difficulty, and consequently of considerable interest to the medical bibliographer; and the fact that its illustrations are believed to be among the first, if not the very first, examples of copper-plate engraving which were produced in England, gives the book an importance from the standpoint of the annals of typography which can hardly be exaggerated. Published first in the year 1540, and dedicated to "the most gracious and in all goodnesse most excellent vertuous Lady Quene Katheryne," the work lived on till 1676, new editions constantly appearing with but few alterations, until finally it had to give place to more modern books with a much more transitory existence. Seeing the light in the days when Henry VIII. was King, it

survived the stormy times of Edward VI. and Queen Mary, and was a strong and healthy work in the Elizabethan age of literary and national grandeur; the Tudors went and the Stuarts came, and the book reached the summit of its life's arch; it was more than a hundred years old when the Civil War broke out, and a new edition appeared in the days of the Commonwealth five years after Charles I. was executed; it was now a very old book, but it lived to see the Restoration, and had vitality enough to blossom out into a new and last edition in 1676. The study of so remarkable a work cannot be without interest, and I propose in the following pages to touch upon some of the many problems and considerations which cluster round it.

The First English Book on Midwifery.

The book's claim to be regarded as the first work in English on the subject of midwifery is the initial problem which calls for consideration.

Dr J. H. Aveling, in his "Account of the Earliest English Work on Midwifery and the Diseases of Women" (*Obstet. Journ. Gr. Brit. and Ireland*, ii., 73, 1875), gives the following interesting information:—"In the British Museum, among the Sloan Manuscripts, is one of the fifteenth century, vellum in quarto, beautifully written and illuminated, two hundred and thirty-four pages of which are devoted to 'Midwifery and the Diseases of Women.' From a note at the beginning we learn that it belonged to Richard Ferris, who was Master of the Barbers and Surgeons Company in 1563, and Sergeant Surgeon to Queen Elizabeth, and that at his death he bequeathed it to John Felde, who was to pay the executors for it 'xxxxviii s. iiii d.' Who the author of this interesting MS. was is not known. It is certain, however, that he was well acquainted with the medical writings of Rogerius of Parma, who lived some time after Albucasis, and whose book was first printed in 1490. The arrangement of the chapters is almost exactly similar,

and in some instances the text is a verbatim translation from Rogerius."

Dr Aveling gives extracts from this work relating to menstruation, and to the sixteen "unkind" ways in which the child may come forth. He reproduces also some of the drawings. The midwife's chief duty seems to have been to push the presenting part up again if it did not come down rightly, and to give various drugs. In cases of retained placenta, "the mydwif should anoynt her hondes and with hir nayles pullen owte the secondine if she mowe."

There can be no doubt that this work by an unknown author is considerably older than the *Byrth of Mankynde*, and Dr Aveling deserves the thanks of the profession for having unearthed the manuscript and for having given so interesting a description of it. There is, however, no evidence that it was ever printed, and it could, therefore, never have served the same purpose as did the *Byrth of Mankynde* in the education and for the guidance of the midwives of the sixteenth century. Whilst, therefore, we cannot claim for the *Byrth* priority as the earliest work on Midwifery in English, we are certainly justified in regarding it as the first printed English book on that subject.

THE AUTHORSHIP.

The question of the authorship of the *Byrth of Mankynde* is not so easy of solution as might be thought from the perusal of the title-page of the 1545 edition or of any of the numerous editions which followed it. The book is uniformly ascribed to Thomas Raynalde, Physician: the spelling may differ, and we find Raynold, Raynald, Reynald, and Reignalds, but obviously the same person is meant; and the designation of the alleged author may also differ, for we find Phisition, Physitian, and Dr in phisick, but obviously a medical man is meant. When, however, we come to consult the first edition of the *Byrth*, that

of 1540, we discover that the authorship or rather the translatorship is claimed by one Richard Jonas, and that the work was "imprynted at London by T. R." As will be seen immediately, "T. R." were almost certainly the initials of Thomas Raynalde, a well-known printer of the sixteenth century. Herein, then, lies the problem of the authorship. It is a triple problem, and may be best stated in the form of three questions: (1) Who was Thomas Raynalde the printer? (2) Who was Thomas Raynalde the physician, and what relationship, if any, did he bear to Thomas Raynalde the printer? and (3) Who was Richard Jonas, and what relationship did he bear to the Raynaldes?

When we wish to know what is to be known with certainty about anyone who has made his mark upon his times and upon the history of the British Isles, we turn, as a matter of course, to the great storehouse of all such information, the *Dictionary of National Biography*. In this case, however, we find even that reliable authority giving an uncertain sound; for the article on Thomas Raynalde, to be found in vol. xlvii., contains statements which are very considerably modified in the volume of *Errata*. Nothing could more surely prove the existence of a mystery than the striking diversity between the accounts given in the original article and in the later volume of *Errata*. The following paragraphs will serve to make this plain.

According to the *Dictionary of National Biography* (vol. xlvii., p. 347, 1896), there were two Thomas Raynaldes living at the same time, the one a physician and the other a printer in London. To the former is ascribed the translation of Rösslin's *De Partu Hominis*, which bears the name "*The Byrth of Mankynde*," and was first printed in 1540. In the volume of *Errata*, however, which was published in 1904, this statement is altered, and we are told that the original writer of the translation was one Richard Jonas, and that Thomas Raynalde's

work consisted in editing the second edition of the *Byrth*, which appeared in 1545. Having got thus far in my investigation, it seemed to me to be essential that I should go to the sources from which W. A. Shaw, the writer of the article in the *Dictionary of National Biography*, had got his information. I, therefore, consulted Ames' *Typographical Antiquities*, both in the edition to which Shaw refers (that augmented by W. Herbert) and in that considerably enlarged by Thomas Frognall Dibdin, as well as in the original work as it left Ames' hands in 1749. It was fortunate that I did so, otherwise I should have been almost as much in the dark as before. The following statements are based upon what I found in Ames' work and its later issues, as well as upon what Dr Aveling has to tell in his *English Midwives* (p. 11, 1872). Ames' information, it must be remembered, relates to Raynalde the printer, and it is only by accident, as it were, that it contains references to Raynalde the physician.

The following is what Ames had to say about Thomas Raynalde the printer. I quote from the *Typographical Antiquities*, London, 1749, p. 219. "Thomas Raynalde dwelt in St Andrew's Parish, in the Wardrop, and kept shop in St Paul's Churchyard. It may be queried whether he was not the noted physician, who set forth the woman's book or birth of mankind, so often printed." Then follow the descriptions of the 1540 and 1545 editions, which I transcribe from Ames' book. "1540. The birthe of mankind, otherwise called the woman's boke. The first translation into English, with many small copper cuts, is dedicated to Queen Catherine, wife to King Henry VIII., and the first rowling press cuts I have seen in English books. To this edition the letters T. R. only. Quarto."

"1545. The byrth of mankynde, otherwyse named the woman's booke, newly set furth, corrected and augmented, whose contentes ye maye rede in the table of the booke, and more playnly in the prologue. By Thomas Raynold, phisition.

This edition has Thomas Ray, which, if not the name of another printer, is a contraction from Raynalds. Quarto."

These statements from Ames' work seem to have been the source of most of the comments upon the *Byrth of Mankynde* and upon its supposed author during a long series of years. In a later edition of Ames' *Typographical Antiquities*, that edited and augmented by William Herbert, the same facts are stated (vol. i., p. 581, 1785); and this is the edition to which the writer of the life of Raynalde in the *Dictionary of National Biography* tells us that he had access. We thus see how it was that the idea that Raynalde the printer and Raynalde the physician were the same person arose, and we also note how the edition of 1540 came to be ascribed to Raynalde ("to this edition the letters T. R. only").

In another volume of this same edition of Ames' *Typographical Antiquities*, however, a piece of information is found which throws doubt upon the identification of Thomas Raynalde the printer with Thomas Raynalde the physician. In the third volume, published in London in 1790, and on page 1570, is the description of another book ascribed to Thomas Raynalde. It was published in 1551, and is thus described by Ames' editor (Herbert). "Dr Thomas Raynalde, his declaration of the vertues of a lately invented oyle, called for the worthiness thereof, the Oyle Imperiall, with the manner howe the same is to be used against innumerable diseases. Printed at Venice by J. O. Griphius. Octavo." A copy of this book is in the Britism Museum, and is thus catalogued: "A compendious Declaration of the . . . Vertues of a Certain lateli invented Oile, called . . . Oile Imperial with the maner how the same is to be used, etc. J. Gryphius: Venetiis, 1551. 8°." Now the existence of this second medical book by Dr Raynalde, its publication in Venice by a Venetian printer, and its dedication by Raynalde "to his singular friend, Francis Mery, merchant, of the city of London," seem almost of necessity to lead to the

conclusion that Thomas Raynalde of the *Byrth of Mankynde* was not Thomas Ray or Raynalde the printer. But, further, when we come to consult a still later edition of Ames' *Typographical Antiquities*, that edited and enlarged by Thomas Frognall Dibdin and published in 1810, we get more light upon the question of the authorship of the *Byrth of Mankynde* as well as some very interesting facts regarding the 1540 edition of that work.

In Dibdin's edition of Ames' *Antiquities* (vol. iii., p. 563, 1816), the following notes appear :—"Thomas Raynald. Of this ingenious printer we are unluckily without any authentic sources of information, except that he dwelt at first in St Andrew's Parish, in the Waredrop, and in 1549 kept a shop at the Signe of the Star in St Paul's churchyard. It may be queried (says Ames) whether he was not the noted physician, who set forth the woman's book, or birth of mankind, so often printed? But there seems to be very slight grounds for this quaere, as it is nowhere apparent, but upon the face of a colophon, that Raynald the printer was a physician." Dibdin then goes on to describe very fully the 1540 edition of the *Byrth of Mankynde*, from the examination of a perfect copy in "the richly stored library of my friend Mr Herbert"; and I here give his description, which, in view of the extreme rarity of this edition, is exceedingly valuable. "*The Byrth of Mankynde.* 1540. Quarto. 'The byrth of mankynde newly translated out of Laten into Englysshe. In the which is entreated of all suche thynges the which chaunce to women in theyr labor, and all suche infyrmitees whiche happen unto the Infantes after they be delyuered. And also at the latter ende or in the thyrde or last boke is entreated of the conception of mankynde, and howe manye wayes it may be letted or furtheryd, with diuers other fruytefull thynges, as doth appere in the table before the booke. *Cum priv. regal. ad impr. sol.*' On the back of the title-page is a sort of religious 'admonicion to the reader,' which is followed by a dedication

of six pages 'Unto the most gracious and in all goodnesse most excellent vertuous Lady Quene Katheryne wyfe and most derely belouyd spouse unto the most myghty sapient Christen prynce Kynge henry the VIII. *Richard Ionas* wyssheth perpetuall ioye and felicyte.'" Dibdin concludes his description by stating that "at the end, we read this colophon: 'Imprynted at London by T. R. Anno Domini MCCCCCXL.'"

Here, then, we have an indication of the authorship of the earliest known edition of the *Byrth of Mankynde:* the author, or rather the translator of Rösslin's *De Partu Hominis* (for a translation is what the 1540 edition really was), was a person called Richard Jonas: and the T. R. of the colophon referred to Tho. Ray the printer. But when we come now to ask who Richard Jonas was, we are almost brought to a stop. If we turn, however, to the Prologue which precedes the first book of the later editions of the *Byrth*, we find a reference which must surely apply to Jonas. I quote from the 1552 edition (but I believe the 1545 is identical). "Wherfore now to come to our purpose, ye shal understand that about a thre or foure yeres past, a certayne studious and diligent clarke, at the request and desyre of diuers honest and sad matrones, beynge of hys acquayntaunce, dyd translate out of Latin into English a great part of thys boke, entiteling it according to the Latine inscription (de partu hominis, that is to saye: of the byrth of mankynde) which we nowe do name (The womans boke) (for so moch as the most parte or well neare all therein entreated of, doth concerne and touche onely women). In whych hys translation he varied, or declyned nothing at al from the steppes of his Latine auctor. Obseruynge more fydelytye in translatynge, then choyse or dyscretion at that tyme in admyttynge and alowyng many thynges in the same Boke, greately neadyng admonityon and wary aduyse or counsell to the readers, whyche otherwyse myghte sometymes use that for a helpe, thee whyche shoulde turne to a hynderaunce, wherefore I reuoluyng and earnestly

reuysinge from top to too ye sayd boke, and here withal considering the manifold utilite and profyte, whych thereby moughts ensue to all women (as touching that purpose) yf it were more narowly loked ouer, and wyth a strayghter iudgement more exactely euery thing therein pondred and tryed, thoughte my labour and paynes shuld not be euyl employed, ne unthankefully accepted and receaued of al honest, discrete and sage wemen. If I after good and dylygent perusing thereof dyd correcte and amende soche fautes in it, as semed worthy of the same, and to aduyse the readers what thynges were good or intollerable to be used, which were daungerous, and which were utterly to be eschued. The which thinge I haue not only so done, but ouer this haue ther unto adioyned and annexed dyuers more experimented and more familier medicines."

In these lines of the prologue of the 1545 and subsequent editions we are told all that we know of Richard Jonas, for I do not think it can be doubted the "studious and diligent clarke" referred to was Richard Jonas. This, at any rate, is the view of the matter taken by the authorities at the British Museum and by Dr Aveling. In the *British Museum Catalogue* of printed books, under the name *Jonas* (Richard), is placed *The Byrth of Mankynde*, 1540; and in another volume of the same catalogue the same book appears under Roesslin, showing that the work was recognised as a translation of the latter author's *De Partu Hominis*, and that the translation was ascribed to Richard Jonas. Unfortunately the British Museum copy is imperfect, for it lacks the plates which are described in the text. To this edition I shall again refer, in the meantime I simply repeat that it seems to be undoubted that *it was the first edition of the Byrth of Mankynde, that it consisted of a translation of Rhodion's or Rösslin's "De Partu Hominis," that the translator was Richard Jonas, and that it differed in several respects from the later editions.*

Although nothing more is known with certainty about

Richard Jonas, I may touch upon some circumstances which may serve to throw a little light upon his personality. By the end of 1540 Henry VIII. had led five wives to the altar. In 1531 Catharine of Aragon was put away, although the marriage was not annulled as void until May 1533, four months after the king had privately married Anne Boleyn. In 1536 Anne was executed, and on the day after the execution Henry married Jane Seymour; she died in childbirth. In 1540 Henry was for a few months the husband of Anne of Cleves. The Lutheran princess was soon divorced and Katherine Howard put in her place: but she was beheaded in 1542 (February), and another Katherine (Parr) became Henry's wife in 1543. The writer of the life of Thomas Raynalde in the *Dictionary of National Biography* states that it was to Queen Catherine Parr that the *Byrth of Mankynde* was dedicated; but, since the work was published in 1540, it must have been Queen Katherine Howard who was indicated in the dedication. It is impossible now to determine the circumstances of the publication of this edition; but some guesses may be hazarded. In the first place, it is significant, I think, that Queen Jane Seymour should have died in childbirth, for this death would draw attention very sharply to the perils of parturition, and would lead midwives and surgeons to inquire whether any more reliable guides to practice existed in the English or in foreign languages than were commonly known or used. Queen Anne (of Cleves) was a sister-in-law of the Elector Frederick of Saxony, and had other family ties with the Lutheran princes of Germany. Justus Jonas, of Wittenberg, was a distinguished disciple of Luther, and it is just possible that he was related to the London Richard Jonas (who may even have come over in the train of Queen Anne) who translated the *Byrth of Mankynde*. Rhodion's book was well known in Germany at this time. Further, it may have been intended that the work should be dedicated to Queen Anne;

her early dismissal, and her succession by Queen Katherine Howard may account for its dedication to the latter.

I am now in a position to proceed to the discussion of who T. R. of the 1540 edition was, and of the relationship he bore to Tho. Ray and to Thomas Raynalde the printer, and Thomas Raynalde the physician. In the first place I think there can be no doubt that T. R. of the 1540 edition (Jonas's translation) was the printer whose name appears as Tho. Ray in the colophons of the 1545 and 1552 editions. In a later work printed by Thomas Raynalde his name is indicated by the initials T. R., I refer to the *Processionale* published in 1555; and it seems too artificial a suggestion to suppose that two printers with names having the same initials should have printed the first and second editions of the *Byrth of Mankynde*. But it may be said that these reasons do not disprove the possibility that Tho. Ray and Thomas Raynalde the printer were different people. Neither they do; but there is no evidence whatever that any printer of the name of Tho. Ray existed; if there had been any such evidence either Ames himself or one of his two distinguished editors would almost with certainty have found it out. It may be concluded, therefore, *that T. R. of the* 1540 *edition and Tho. Ray of the* 1545 *and* 1552 *editions were one and the same person, and that he was Thomas Raynalde the printer in St Paul's Churchyard, London.*

Now Ames' query whether Thomas Raynalde the printer was not the noted physician who set forth the *Woman's Book* or the *Byrth of Mankynde* calls for consideration. Raynalde the printer sent out from his press in London several other works between the years 1540 and 1555; among these were the two editions of the *Byrth of Mankynde* (1540 and 1545), a *Treatise against the Masse* (1548), a *Plaister for a Galled Horse* (1548), the *Boke of Barthra Priest* (1549), *Certaine Psalmes* (by Sir Thomas Wyatt, 1549), and the folio *Byble* (1549). No works seem to have come from his press after 1555, when the

Processionale made its appearance. He flourished, therefore, between the years 1540 and 1555. As it happens these were also the years during which we have any information regarding Thomas Raynalde the physician. His name appears upon the title-page of the 1545 and 1552 editions of the *Byrth of Mankynde* as well as upon a second book, published at Venice in 1551 and already referred to (*vide antea*). From internal evidence in these two works we learn further that he was at Venice (in 1551), in Padua, and in Paris. His work on *Oyle Imperiall* is described in Ames' *Typographical Antiquities* (Herbert's edition, iii., p. 1570, 1790) among those books "printed abroad by Englishmen, and other printers for them," and the epistle dedicatory is dated from Venice (March 1, 1551) to the author's "singular friend, Francis Mery, merchant, of the city of London," and in it there is an acknowledgment of the author's indebtedness to this merchant who had purchased from him a large quantity of the oil. A copy of this work is in the British Museum, catalogued under Thomas Raynalde's name; the printer's name is J. Gryphius. In the 1560 edition of the *Byrth of Mankynde* appears for the first time the ninth figure in the anatomical plates, that showing the uterus cut open; to this is annexed (on folio li.) the following description: "And the nynth figure sheweth the Matrix cut forth of the body, being of that bygnesse as it was sene taken foorth of a woman at the laste Anothomye, which I dyd se[1] at the uniuersitie of Padua in Italy." In the 1552 edition there is a reference to medical practice, which seems to throw some light upon the doings of the writer or editor; it is as follows:—"Yet agayne to confyrme myne opinion, that the Termes do onely issue oute of the vaute of the matrix: ye shall understande, that at sundry tymes I haue had two dyuers wemen in cure thone in London and thother in Paris: of which thone by a fal from her horse,

[1] This sentence is suspiciously similar to that in which Vesalius describes the same figure in his work, published in 1543.

the other by a violent thrust and squat on the buttockes upon the harde stones in the strete, beynge both neare the tyme of theyr purgation, chaunced also both of them into one maner of disease (that is to say) immediately here upon, theyr Termes dyd issue." The writer continues his description of these two cases, and draws some deductions from them regarding menstruation (*vide* folio xliiii. of this edition).

These facts are, I think, sufficient to show that it is very improbable that Thomas Raynalde the printer, and Thomas Raynalde the physician, were one and the same person; for, if they were, then we must imagine the printer travelling widely on the Continent (Venice, Padua, Paris), having a book printed for him at Venice by another printer called Gryphius, while all the time books were issuing from his own press in St Paul's Churchyard in London. To my mind it is much more likely that they were individuals bearing the same name. It is possible that they were cousins or uncle and nephew. At any rate we can easily imagine the printer asking the physician to revise and add to Jonas's work, the first book which had come from his press and one which had evidently sold well since a second issue was needed at the end of five years; we can also easily understand that the physician would be led to incorporate his personal experience in the second edition and add new chapters to the work in order to make it more widely useful. To Thomas Raynalde's pen must, I think, be ascribed the greater part of the Prologue to the Women Readers and most of the first book of the 1545 and subsequent editions; the remaining parts are translations from Rösslin's *De Partu Hominis* made doubtless by the "studious and diligent clarke," whom we must regard as Richard Jonas. Of course it is just possible that Thomas Raynalde may have been the maker of the translation of 1540, and that he took the *nom de plume* of Richard Jonas to save himself from the possible obloquy which might attach itself to the physician who concerned himself (in those times)

with the subject of midwifery. There are other possible solutions of the problem of authorship; but it seems to me to be *probable that the* 1540 *edition was the work of Richard Jonas and was a simple translation of Rösslin's "De Partu Hominis"* (most likely the 1538 edition published at Paris "apud Joannem Foucher"), *that the second edition* (1545) *was revised and considerably added to by Dr Thomas Raynalde, and that he also added to and edited the third and probably the fourth editions* (1552 *and* 1560). I think, therefore, it is permissible to call the work Raynalde's *Byrth of Mankynde* rather than Jonas's Byrth of Mankynde or Jonas's English Translation of Rösslin's *De Partu Hominis*, on account of the Prologue and the new material in Book I., and for the reason that for more than three hundred years it has been so named. To the first edition, however, it is more correct to give the name Jonas's Translation of Rösslin's *De Partu Hominis*, and to catalogue it either under Jonas or Rösslin. Further consideration will be given to this subject when the peculiarities of the various editions have been described.

I may here conveniently summarise the conclusions at which I have arrived regarding the authorship of the *Byrth of Mankynde*. (1) The 1540 edition of the book was a translation of Rösslin's or Rhodion's *De Partu Hominis* made by Richard Jonas, the "studious and diligent clarke" referred to by the editor of the 1545 edition. (2) It was printed by T. R.; and these were the initials of Tho. Ray or Thomas Raynalde, the printer, who had a shop in St Paul's Chnrchyard, and from whose press various works issued between the years 1540 and 1555. (3) The second edition, which appeared in 1545, was revised "from top to toe" by Thomas Raynalde, the physician, and was considerably added to by him, the additions consisting of the Prologue and most of Book I., as well as of short paragraphs in the other books. (4) Thomas Raynalde, the physician, seems to have practised in London and Paris and

to have visited Venice and Padua; he may have been a relative of his namesake the printer. (5) He may have edited the third edition (1552) and the fourth (1560); but subsequent editions were almost identical, and were printed by different printers (Richard Jugge, R. Watkins, T. Adams), and probably Thomas Raynalde the physician had no hand in them.

THE EDITIONS OF THE "BYRTH OF MANKYNDE."

(a) *The* 1540 *Edition.*

I have already referred to (p. 238) and quoted from Dibdin's description of the 1540 edition, given in his edition of Ames' *Typographical Antiquities* (vol. iii., p. 563, 1816). His description is of great value, for it was made from a perfect copy in Herbert's library. There is a copy at present in the British Museum; but it is imperfect, consisting of 84 numbered leaves instead of 86 (in Herbert's copy), and it lacks the plates. The title-page differs widely in its wording from that of later editions: the book is named "The byrth of mankynde, newly translated out of Laten into Englysshe," etc., and the alternative title "the womans booke," does not appear; there is no author's or translator's name on it; and there is no allusion to the Prologue but only to "the table before the booke." The "sort of religious admonicion to the reader" which appears upon the back of the title-page is evidently peculiar to this edition, and is probably replaced by what I have termed the Aristarchus preface of all later editions. The dedication (of six pages) to "the most gracious and in all goodnesse most excellent vertuous Lady Quene Katheryne" is also peculiar to this edition, and has been referred to already.

In addition to what has been stated already about the 1540 edition of the *Byrth of Mankynde* I may give the following particulars (Ames' *Typographical Antiquities*, vol. iii., p. 563, 1816). "The book contains 86 numbered leaves, and is printed on stout paper, in a fine large Gothic type. Between folio xxiv. and v.,

there are four copperplate engravings containing seventeen illustrations of children *in utero*. These are very curious, as being among the rarest early specimens of this kind of engraving [the first ever seen by Ames] published in this country." These plates call for further consideration. I quote again from Ames' *Typographical Antiquities*, as edited by Dibdin (vol. i., pp. 24, 25, 26, 1810). "While the foreign presses were putting forth the most beautiful books, and the gravers of Albert Dürer and Aldegraver were exhibiting equally beautiful specimens in the sister art, we were, I fear, generally obliged to content ourselves with the importation of worn and battered blocks, or with foreign artists discarded from want of capacity. This may account for the tardy appearance of the first Copper-Plate impressions in this country, executed by means of a roller —which are supposed to be the frontispiece to Galenus De Temperamentis printed at Cambridge in 1521, . . . and the cuts in Raynalde's *Birth of Mankind*, 1540. . . . Although Strutt says: 'it is by no means certain that these (latter) plates were engraved in England or the work of English artists,' yet, when the rudeness of the figures and the absence of any similar style of engraving preceding the date of publication of both works are considered, we may be disposed to conclude that they are the earliest known specimens of impressions from Copper Plates in this country." It is a misfortune that the copy of the 1540 edition in the British Museum lacks these plates, so we are unable to judge of their characters. The reproduction of one of them given in Ames' work (vol. i., p. 25, 1810) unfortunately is "printed from a wooden block for the convenience of press work," and probably gives little idea of the original, although the editor states that "it will be found to exhibit a very faithful character of the original."

I have seen the so-called 1540 edition of Raynalde's *Byrth of Mankynde*, which is in the Library of the Obstetrical Society of London. Even a cursory examination of the work makes it

very doubtful whether it is what is claimed for it in the Catalogue, and a more careful inspection makes it practically certain that it is really the 1634 edition. The title-page is in manuscript, and so forms no indication of the real age of the work: but the type is only partly black letter, the marginalia are in ordinary type, the Aristarchus preface is in English not in Latin, the pagination is by pages not by folios, and the spelling is that of the seventeenth and not of the sixteenth century. There are several other features in which the copy resembles the later rather than the earlier editions, and I do not doubt but that it is really the 1634 edition. The absence of the title-page and of the last two or three pages at the end, and their replacement by transcriptions make it impossible to be quite sure (of course the *transcriptions* may have been made from other editions). It is certainly not the 1626 edition.

There is another copy of the *Byrth of Mankynde* which carries the date 1540 on the title-page; this is in the Library of the University of Glasgow. The date, however, is written in, there being no printed intimation of it. This copy is, therefore, probably the undated edition of 1564 (*q. v.*). It came from the Collection of James Hotson, of Airdrie, and was presented to the University by Dr Thomas Reid, the oculist.

This edition of 1540, it will be remembered, is not in any sense a Raynalde one except in so far that it was printed by Thomas Raynalde, the printer. It is a translation into English of Rösslin's *De Partu Hominis*, made by Richard Jonas: and it ought to be catalogued either as Jonas's *Byrth of Mankynde* or as Rösslin's *De Partu Hominis* in English.

I have carefully collated the contents of this first edition of the *Byrth* with those of later editions. The 1540 edition has its contents divided into three instead of four books; it lacks the Prologue to the Women Readers which appears in later editions; but it has the dedication to Quene Katheryne; it lacks also the Plates of Anatomical Figures which later editions

have, although it possesses the Birth Figures (indeed, all the editions have the latter). The collation of the chapters is as follows.[1]

1540 Edition.	1552 Edition.
First Book.	First Book.
Chapter I.	Chapter XIV.
	Second Book.
Chapter II.	Chapter I.
Chapter III.	Chapter II.
Chapter IIII.	Chapter III.
Chapter V.	Chapter V. (error).
Chapter VI.	Chapter V.
Chapter VII.	Chapter VI.
Chapter VIII.	Chapter VII.
Chapter IX.	Chapter IX. (error).
	Chapter X.
	Third Book.
Chapter X.	Chapter I.
	Chapter II.
Second Book (not in chapters)	Chapter III.
Third Book	Fourth Book.
Chapter I.	Chapter I.
Chapter II.	Chapter II.
Chapter III.	Chapter III.
Chapter IIII.	Chapter IIII.
Chapter V.	Chapter V.

Briefly stated, the first and second books of the 1540 edition correspond to the second and third books of the later

[1] I have used the 1552 edition for purposes of collation, but it very closely resembles the 1545.

editions; and the third book of the former edition to the fourth book of the later editions. The first chapter of the first book of the 1540 edition, however, corresponds to the fourteenth of the first book of the later editions; and the tenth chapter of the second book of the later editions has no corresponding chapter in the 1540 edition. This collation of the chapters is of value, further, because it explains some of the irregularities in the numbering of the chapters in the 1552 and 1560 editions; the printer has evidently forgotten sometimes that the two series of chapters did not exactly coincide, and has attempted occasionally to make them do so. The greater part, then, of the first book of the 1545 and subsequent editions is not represented in the 1540 one, and is, along with the Prologue, to be ascribed to Raynalde.

The collation of the 1540 edition with Rösslin's *De Partu Hominis* (the Paris edition of 1538) shows that the first and second books of the former correspond to the twelve chapters into which the latter is divided; the third book of the former is not represented in Rösslin's work. The Byrth Fygures also correspond in the two works, but are not arranged in the same order.

(b) *The* 1545 *Edition.*

The Royal College of Physicians of London has a fine copy of the 1545 edition of the *Byrth of Mankynde;* through the courtesy of the College I have been able to examine this book. The title-page has a woodcut border, but the degree of ornamentation and illumination is small as compared with what some of the later editions show. The date (Anno M. D. XLV.) is rendered slightly uncertain, for the Library Stamp of the College covers it and makes it appear as if there were another figure between the D and the X; but I think it is correctly given in the Catalogue as 1545, and that the figure is only a full stop and a blur. The date is not repeated at the end of the

work, so that it cannot thus be checked. The setting of the title is as follows:—

The byrth of
mankynde, otherwyse named
the womans booke, Newly
set furth, corrected and
augmented, whose con-
tentes ye maye rede
in the table of the
booke and most
playnly in the
prologue

By Thomas Raynold
Phisition

Anno M. D. XLV

At the end of the work is the word "Finis," followed by "Imprynted at London by Tho. Ray." "Imprynted" is preceded by the paragraph mark (¶), which is very commonly employed in this edition although it does not appear upon the title-page. The book is printed entirely in black letter, including the marginalia; and there are woodcut capitals. There are 148 leaves or folia, but the numbering of them is irregular and seems to be erroneous;[1] there are 4 preliminary leaves, and the Prologue occupies 18 leaves; so that, in all, there are 170 leaves or folia (about 340 pages of a modern book). Inserted at folio 46 are two plates representing dissections of the anterior abdominal wall; at folio 63 are two leaves, printed on both sides, (*i.e.*, four plates) of copperplates, consisting of the "Birthe

[1] After signature J, follows Hh8; and then Hhh6; it contains Y10 in eights; A, only 4.

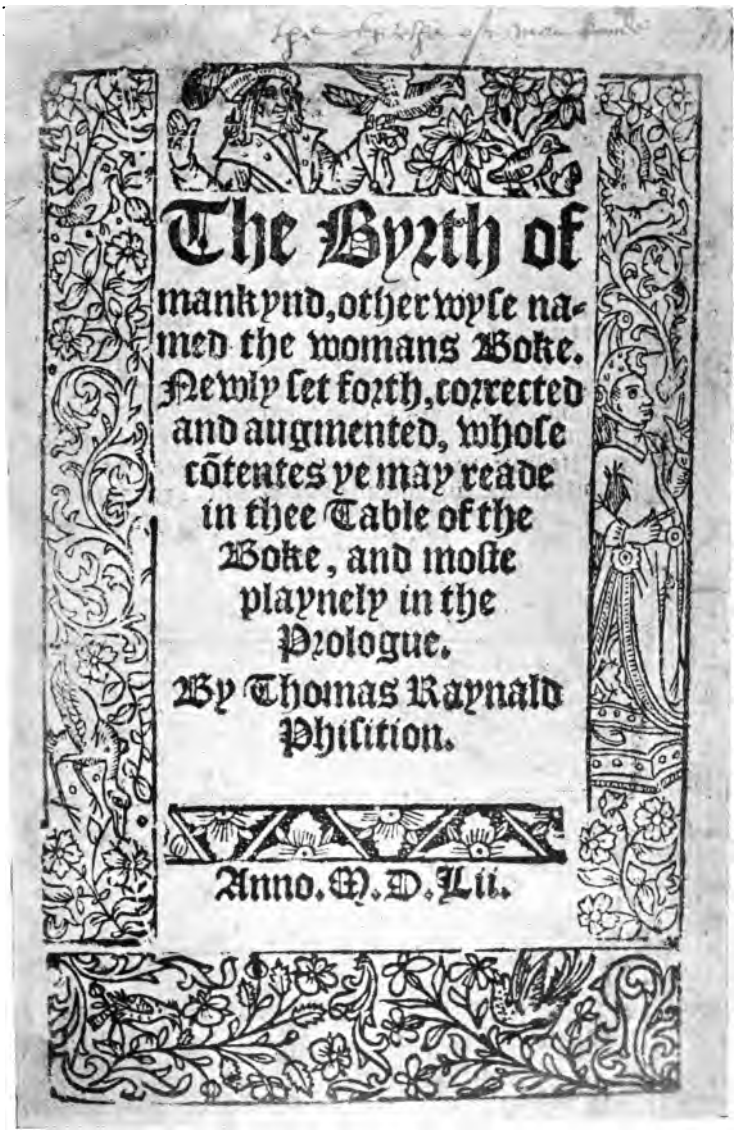
Figures," viz., "the Woman's Stoule," and 17 figures showing the presentations of the child *in utero*. The anatomical plates are from Vesalius, the "Birthe Figures" from Rösslin. On folio 108, at the end of the second book, is the following interesting passage which I here quote. "And as touching the aboue Trociskes and emplasters described here in this place, ye shall fynde them alwayes readye made at the signe of the thre Dooues in Boucklars bery[1] in London: the name of the good man of ye house wyllam Normewyll. In whose shoppe I haue caused the sayde thinges faithfully to be made, for because that I am certayne that he is one of the moostt fydell and faithfullest Apothecaries in London: And suche as wyll not spare for any cost to acquire and obtayne of the best and moost singular symples and droges in there kynde, that may be gotten for monye." This passage throws an interesting sidelight upon the life of the time, and on the relations of medical men and apothecaries, as well as upon the pharmacy of the middle of the sixteenth century. It may also be compared with the corresponding passages in some of the other editions, to which reference will be made under these editions.

It is to be noted that the preface, commencing "Quamvis possit Aristarchus," is in Latin in this edition as it is also in that of 1552 (*q. v.*).

(c) *The* 1552 *Edition.*

The edition of 1552 is a small quarto of 149 folia or double pages, not including 20 folia devoted to the table of contents and Prologue. The title-page, reduced very slightly in size, is reproduced in Fig. 1. It is noteworthy that in the ornamental border on the right side is the figure of a midwife

[1] Bucklersbury was in Cheapside, and was noted for its druggists' and grocers' shops. There is an allusion to it in Shakespeare's *Merry Wives of Windsor* (Act iii., sc. iii., 19): "Many of these lisping hawthornbuds, that come like women in men's apparel, and smell like Bucklersbury in simple time."



The Byth of mankynd, otherwyse named the womans Boke. Newly set forth, corrected and augmented, whose cõtentes ye may reade in thee Table of the Boke, and moste playnely in the Prologue.

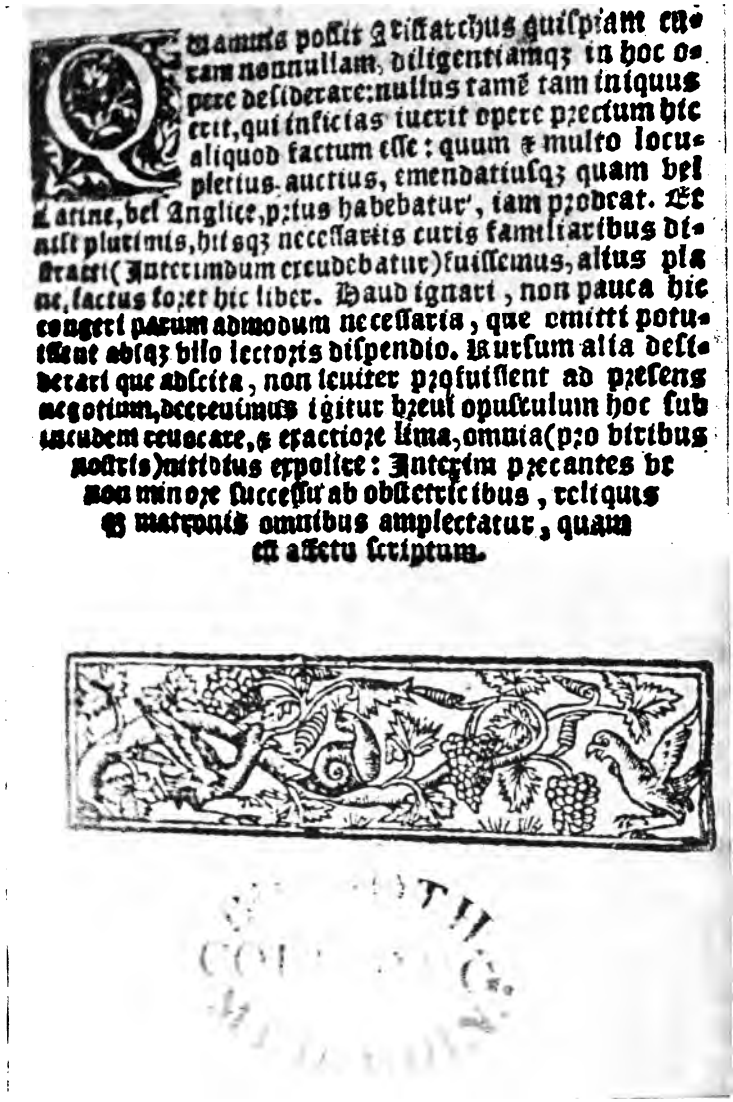
By Thomas Raynald Phisition.

Anno. M. D. Lii.

Fig. 1.

Title Page of the 1552 Edition.

[*Face page* 252.



Quamuis posſit Aristarchus quispiam eam non nullam, diligentiamq; in hoc opere desiderare: nullus tamē tam iniquus erit, qui inficias iuerit opere pretium hic aliquod factum esse: quum & multo locupletius, auctius, emendatiusq; quam vel Latine, vel Anglice, prius habebatur, iam prodeat. Et nisi plurimis, hisq; necessariis curis familiaribus distracti (Interimdum credebatur) fuissemus, alius plane, factus foret hic liber. Haud ignari, non pauca hic congeri parum admodum necessaria, quæ omitti potuissent absq; ullo lectoris dispendio. Rursum alia desiderari quæ adscita, non leuiter profuissent ad præsens negotium, deceuimus igitur breue opusculum hoc sub incudem reuocare, & exactiore lima, omnia (pro viribus nostris) mitiorius expolire: Interim precantes vt non minore successu ab obstetricibus, reliquis q; matronis omnibus amplectatur, quam est affectu scriptum.

Fig. 2.

Latin Preface to the 1552 Edition.

[*Face page* 252.

(or of a pregnant woman) with the forefinger of each hand extended as if for a vaginal examination. The date (MDLii) is clearly set forth, and the name of the author is given as Thomas Raynald, Phisition. On the reverse side of the title-page is the preface in Latin. In the editions of 1560, 1564 (?), 1565, 1598, 1626, 1634, 1654, and I presume all the others, the preface appears in English. The Latin is reproduced in Fig. 2, and I give here the translation as it appears in the edition of 1560: "Albeit some Aristarchus[1] may perhappes finde some lacke of faithfulnesse and diligence in this work: yet there is none so froward to deny but that there is some fruit and profyte to bee founde therein, seyng that it commeth nowe abrode much more enlarged and encreased, and more diligently corrected then it was before, eyther in the Latine or in the Englyshe. And where before in the other printes, there lacked matter necessary to the openyng and declaration of the figures pertaynyng to the inner partes: it is nowe so plainely set foorth, that the simplest Mydwyfe which can reade, maye both understand for her better instruction, and also other women that haue nede of her help, the more commoditie. Wherefore my desyre is, that it maye be receaued and practysed of Mydwyues and all other Matrones, with no less successe, then it is with good wyll and desyre wrytten to profite and to do good to other."

Then follow the table of contents and "A Prologe to the women Readers." Frequently throughout the table of contents and the Prologue there occurs the old sign for paragraph (something like a reversed D, thus ¶); it is seen also throughout the whole book, but it does not appear on the title-page as it does on that of the editions of 1560 (*vide* Fig. 3) and 1564 (?).

The first book extends from folio 1 to folio 56 (*i.e.*, 112

[1] Aristarchus of Samothrace was a great critic; so the word came to be employed with the meaning of a severely critical person.

pages); it consists of fifteen chapters and of "the declaration by letters of the fygures followyng." Eleven figures in all are described. From the description given, the first and second figures represented dissections of a man's body, showing the peritoneum and the parts below it. At the end of the descriptive notes is the following remark: "Here ye shal be aduertysed that although these two fyrst fygures be made principally for ye man, yet may they serue as wel to expresse the woman; for the man and woman differ in nothyng but in the pryuie partes." In the 1560 edition they have therefore disappeared (reducing the number of figures to nine): further, the declaration in that edition reads as follows: "The declaration by letters of the fygures folowing, wherein be set forth to the eye, euery parte in woman mentioned in thys boke before: Which in the former Printinges hath ben corrupted, but nowe truely set forth." The eighth, ninth, tenth, and eleventh figures of the 1552 edition are the fifth, sixth, seventh, and eighth of the 1560 and subsequent editions. The ninth figure of the 1560 edition ("the matrix . . . . taken foorth of a woman at the laste Anothomye, which I dyd se at the vniuersitie of Padua in Italy") does not appear in the present (1552) edition nor in the 1545; perhaps it took the place of the fifth and seventh figures of the 1552 edition. All these anatomical plates are to be found in Vesalius. (*De Humani Corporis Fabrica*, 1543.)

The second book extends from folio 57 to folio 112; it consists of nine chapters, numbered I., II., III., V., V., VI., VII., IX., and X. In the second part of the third chapter is the description of most of the Birth Figures, viz., the first to the sixteenth (folio 71 to 74). The seventeenth and last of the Birth Figures is referred to on folio 60; it exhibits a two-headed monster. At the end of the second book is the interesting paragraph about the Trochiskes, which reads as follows: "And as touching the aboue Trochiskes and emplasters described here in this place, ye shal fynd them alwayes ready made at the

signe of the thre Doues in Boucklers bery in London: the name of the good man of that house is Wylliam Normeuyl. In whose shoppe I haue caused the sayd thinges faithfully to be made, for because that I am certayne that he is one of the moost fydell and faythfullest Apothecaries in London. And soch as wyl not spare for any coste to acquyre and obtayne of the best and moost singular simples and droges in theyr kynde, that maye be gotten for moneye."

The third book consists of three chapters and extends from folio 113 to folio 136. It deals largely with children's diseases. The fourth book has six chapters, extends from folio 137 to folio 149, and deals with sterility and certain cosmetics or "bellyfying receptes."

The only copy of the 1552 edition which I have had an opportunity of examining is that in the Library of the Royal College of Physicians of Edinburgh. It lacks the illustrations, but is otherwise perfect; and it was given to the College in 1846 by Dr W. Beilby. Here and there throughout the volume are written comments or remarks, and some of these are interesting. They are all very old, as the caligraphy proves, *vide* the written title at the top of the title-page. On the margin of folio 36 is written "The birth of man by Tho: Reignalds D^{r} in phisick," and on folio 18 is a somewhat similar inscription. Again on folio 86 is written "Joshua Jones his book 1688," and on the opposite page is "Richard Jones."[1] These were doubtless former owners of this copy of Raynalde. On folio 60 occurs the marginal MS. note "The birth of man easier y^{n} ye birth of wom." There are some other notes mostly of the nature of comments on the text.

At the end of the work is the word FINIS in Gothic capitals followed by "Imprinted at London by Tho. Ray." The

[1] The occurrence of this name (Richard Jones) suggests the speculation whether the translator of the first edition may not have been a Richard Jones and not a Richard Jonas, and perhaps an ancestor of this Richard.

colophon, however, is not supplied with any date. I have already discussed the relationship of Tho. Ray to Thomas Raynalde.

(d) *The* 1560 *Edition.*

The edition of 1560 has a comparatively plain title-page, that of my copy is reproduced in Fig. 3. It is noteworthy that even the title in this edition is prefixed by the old paragraph sign (¶). There is a good deal of carelessness visible in the headings of the leaves; thus: "the first booke" is put for "the seconde booke" on leaves 58, 59, 60, 61, 74, 75, 76, 77, and 92, whilst "the seconde booke" appears instead of "the thyrde booke" on leaves 102 and 108. The pagination, or, rather, foliation, does not include the "Prologue to the women readers" nor the table of contents; the Prologue covers nineteen as against thirty-three pages in the 1552 edition; the first book covers fifty-one leaves (102 pages) as against fifty-six leaves (112 pages) in the 1552 edition; in all, the four books occupy 131 leaves (262 pages) as against 149 (299 pages) in the 1552 edition. My copy has two former owners' names on the title-page, viz., Geo. Morgan and E. Johnston; it lacks the plates of the anatomical relations of the genital organs, but has the "Birth Fygures" including the "Womans Stoole" and the seventeen figures of the presentations; the latter, consisting of four plates, are placed immediately after the table of contents, and not in the third chapter of the second book where they are described in the text; and it is incomplete at the end, some leaves of the third and the whole of the fourth book being absent. The seventeenth of the birth figures, that of the double monster "such as of late was sene in to the dominion of Werdenberg" is referred to in the second chapter of the second book (leaf 54). There are no written notes or comments in my copy except the statement on the margin of the first leaf of the second book: "Wrote by Tho*-

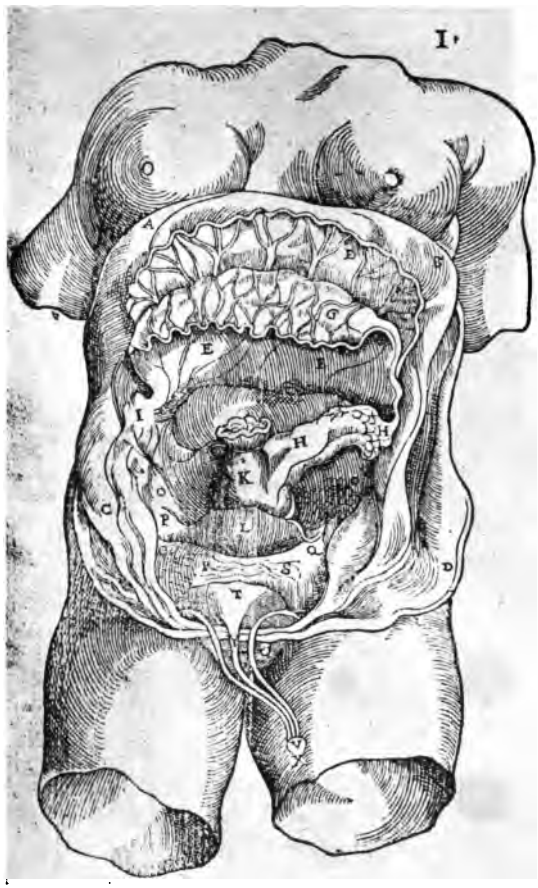


Fig. 4.

Anatomical Figure in the "Byrth of Mankynde."

[*Face page* 256.

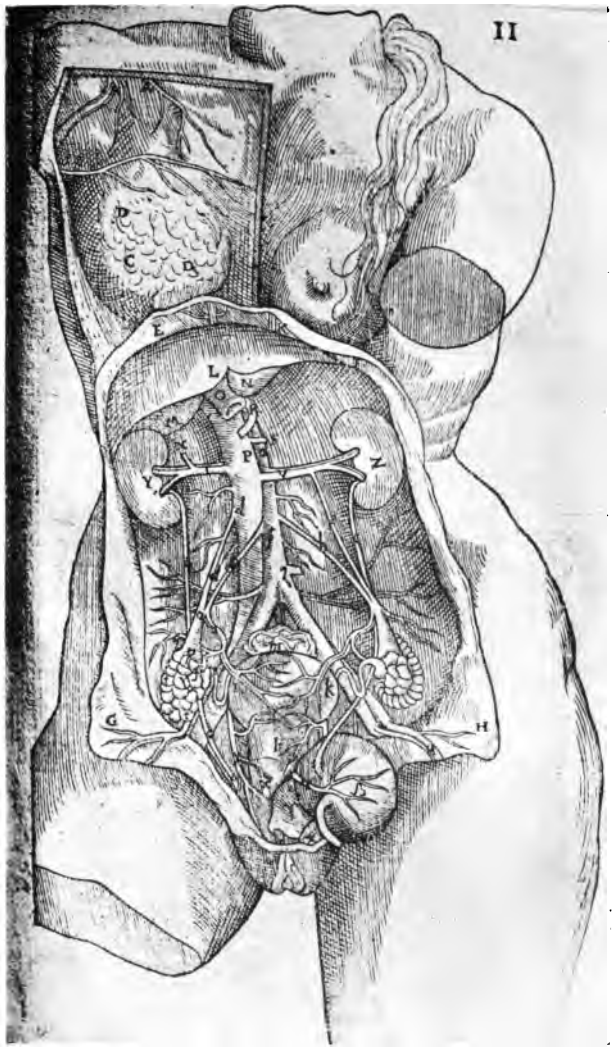


FIG. 5.

Anatomical Figure in the "Byrth of Mankynde."

[*Face page* 256.

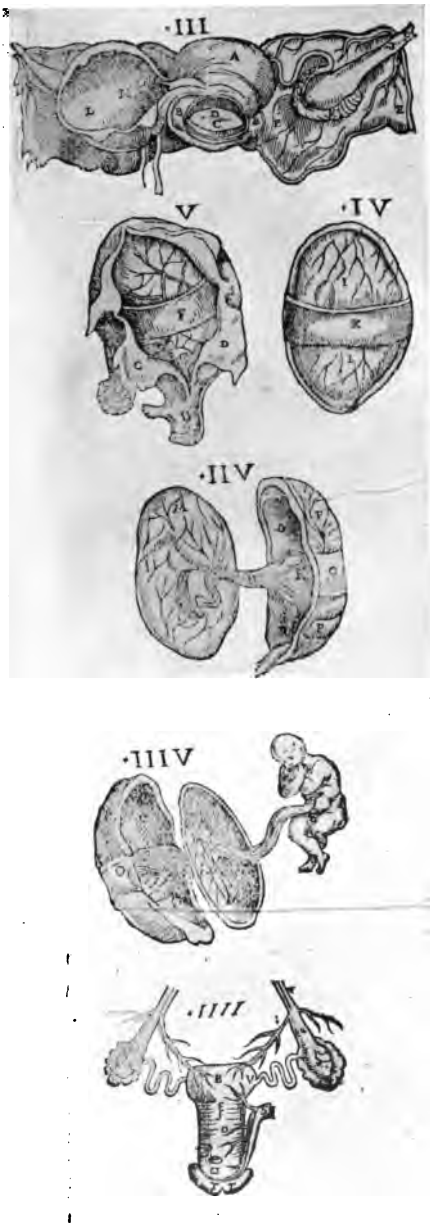


Fig. 6.

Anatomical Figures in the "Byrth of Mankynde."

[*Face page* 256.

IX.

FIG. 7.

Anatomical Figure in the "Byrth of Mankynde."

[*Face page* 256.

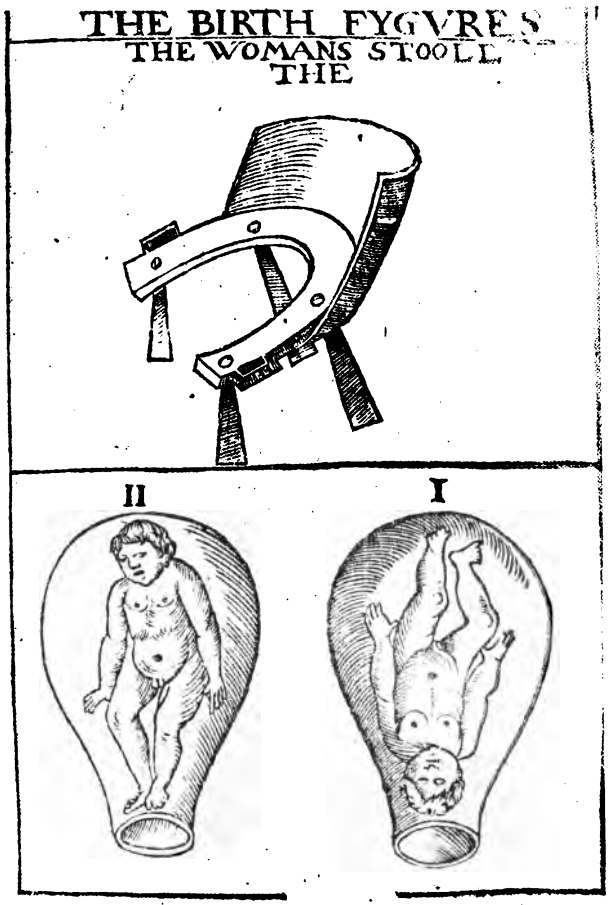


FIG. 8.

Birth Figures in the "Byrthe of Mankynde."

[*Face page* 256.

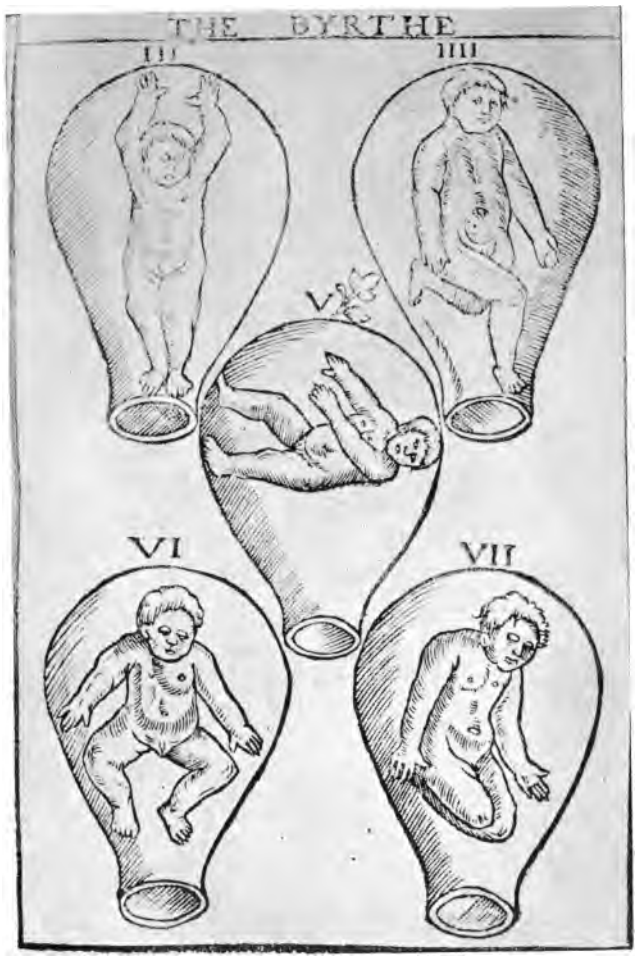


FIG. 9.

Birth Figures in the "Byrth of Mankynde."

[*Face page* 256.

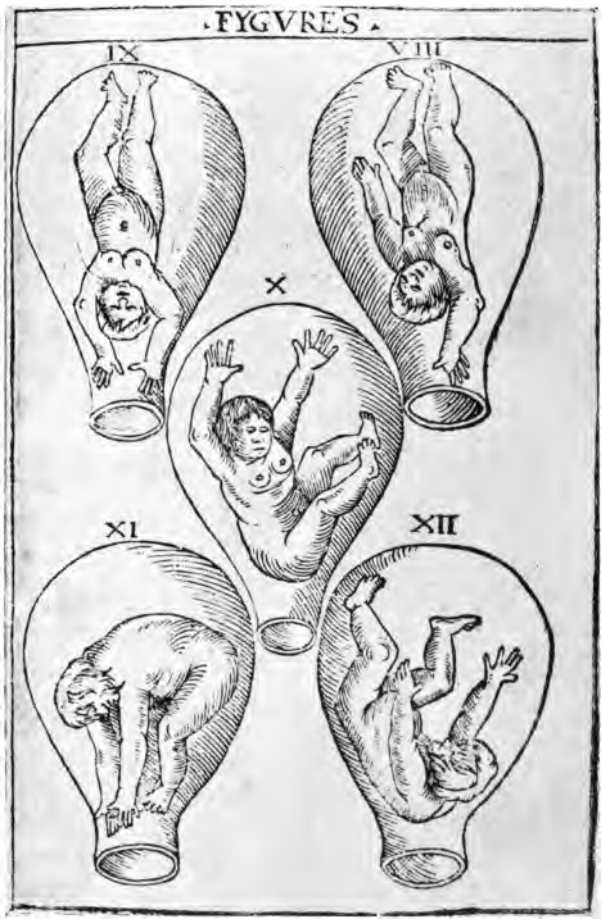


FIG. 10.

Birth Figures in the "Byrth of Mankynde."

[*Face page* 256.

FIG. 11.

Birth Figures in the "Byrth of Mankynde."

[*Face page* **256.**

Raynalde M.D. A.Domini ——1560" (*cf.* the account of the 1552 edition, the copy of the Royal College of Physicians of Edinburgh). The ninth figure of the anatomical plates makes its first appearance in this edition. It "sheweth the Matrix cut forth of the body . . . of a woman at the laste Anothomye, which I dyd se at the uniuersitie of Padua in Italy." It, also, is taken from Vesalius (*De Humani Corporis Fabrica*, 27th Plate in 5th book, 1543). The description suggests that Raynalde himself saw the post-mortem, but a comparison of his words with those of Vesalius throws a doubt upon this point.

There is a perfect copy of the 1560 edition in the University of Aberdeen. It formed part of the Bute gift to that university. No printer's name occurs on this edition, either on the title-page or in the colophon; indeed, there is simply the word "Finis" on the last page. All the illustrations are present in the Aberdeen copy; the nine anatomical figures (from Vesalius) appear at leaves 44, 46, 49, and 51, and two of the plates are folded; the Birth Fygures and the Woman's Stoole are inserted opposite leaf 63. On the flyleaf opposite the title-page is written "Rebekah Cox her Book," and below it is "Edward Challis, His Book, paid 1d at ye second hand 27th March 1669."

The illustrations of the 1560 edition (which are also those of all the later issues) are reproduced in Figs. 4 to 11.

(e) *The* 1565 *Edition.*

The edition of 1565 was a fine one, and a good copy of it is in the Library of the University of Edinburgh. It is a small quarto of 131 folia or double pages, not including 14 folia devoted to the title-page, table of contents, and prologue. The title-page is ornate: the right border contains the figure of a woman and the left that of a man; there is a lion at each side of the base; at the top is a scroll with a monogram which

seems to contain the letters R, E, G, and G. The arrangement and spelling of the words of the title are as follows:—

The birth of
mankynde, other-
wyse named the
womans booke.

Newely set foorth, corrected and
augmented. Whose con-
tentes ye may reade in
the Table of the
booke, and
most
playnely in the
prologue
By Thomas Raynalde
Phisition

The table of contents has some fine initial letters (F, O, and I), and the initial A of the preface is also fine and resembles that of the 1598 edition. The type is black letter throughout, but of varying size. The Edinburgh University copy contains no plates, but the description of the figures is found as usual at the end of the first book and is the same as that in the 1560 edition, containing, as it does, "The declaration of the Karacters of the nynth figure of women." The ninth figure, it will be remembered, was "the matrix cut foorth of the bodye, beyng of that bygnesse as it was seene taken foorth of a woman at the laste Anothomye, which I did see at the vniuersitie of Padua in Italie." There is no indication of the place of publication of this edition; but in the British Museum Catalogue of Printed Books the suggestion is made that it was London. At the end of the work occurs the word

"Finis" with "1565" below it. Below that, again, is a fine ornamental emblem with the following sentences incorporated in it: "Cogita mori"; "Pro lege, rege, et grege";[1] "Love kepythe lawe, obeyeth the kynge, and is good to the common welthe." The paragraph at the end of the second book closely resembles that in the 1560 edition and widely differs from the corresponding passages in the 1552 and 1545 editions. It runs as follows: "And as touchyng the aboue Trochiskes and emplasters described in this place, ye shall fynde them alwayes redye made in Boucklers berie in London."

The motto referred to above as occurring on the title-page is that of Richard Jugge, a printer, who flourished between the years 1531 and 1577. He was educated at Eton and Cambridge, but left the latter without a university degree. He went to London and began to print books about 1548 "at the sign of the Bible at the north door of St Paul's Church." He printed, in all, about seventy books, including Tyndale's version of the New Testament and the Bishops' Bible. "He was unrivalled for the richness of his initial letters, and for the handsome disposition of the text." So writes H. R. Tedder in the *Dictionary of National Biography* (vol. xxx., p. 224); and my inspection of the two editions of Raynalde's *Byrth of Mankynde* which Jugge printed (this one and the next to which I refer) fully bears out the truth of the statement. A favourite device on his title-pages was a rebus of his own name. It consisted of an angel holding an R and of a bird (nightingale) in a nest with "Jugge" "Jugge"[2] printed above it. This enigmatical representation occurs in the undated edition to which I must now briefly refer.

[1] This is the motto of the Earl of Beresborough and of Lords Brougham and De Mauley.

[2] "Jug," "Jug," is an imitative representation of the notes of the nightingale's song.

(f) *The Undated* (1564?) *Edition.*

There is an undated edition printed, like the 1565 edition, by R. Jugge; to this the provisional date of 1564 may perhaps be given. I have examined two copies of this edition; one of these is in the Library of the Royal College of Physicians of London, and the other belongs to Dr J. F. Payne, the Harveian Librarian of the College. This edition has a finely executed title-page, resembling in some details that of the 1565 issue. At the top is the motto of the Crown of England ("Honi soit qui mal y pense"), and at the bottom is the pelican feeding her young with her own blood. The printer's motto occurs in the ornamental border: at one side is an angel (or Cupid) holding the letter R, and at the other a bird (nightingale) in a nest with the word "Jugge" over it. The title is preceded by the paragraph sign (¶), and the setting is as follows:—

¶ The Birth
of mankynde, other-
wyse named the wo-
mans booke
Newly set foorth, corrected, and
augmented. Those con-
tentes ye may reade in
the Table of the
booke, and
most
plainely in the
prologue.
By Thomas Raynalde
Phisition.

At the end of the work is a fine colophon with the same mottoes ("Pro lege," etc.) as in the 1565 edition. Some of the capital letters are markedly ornate, such as the A in the preface and the F in the table of contents. The work contains 131

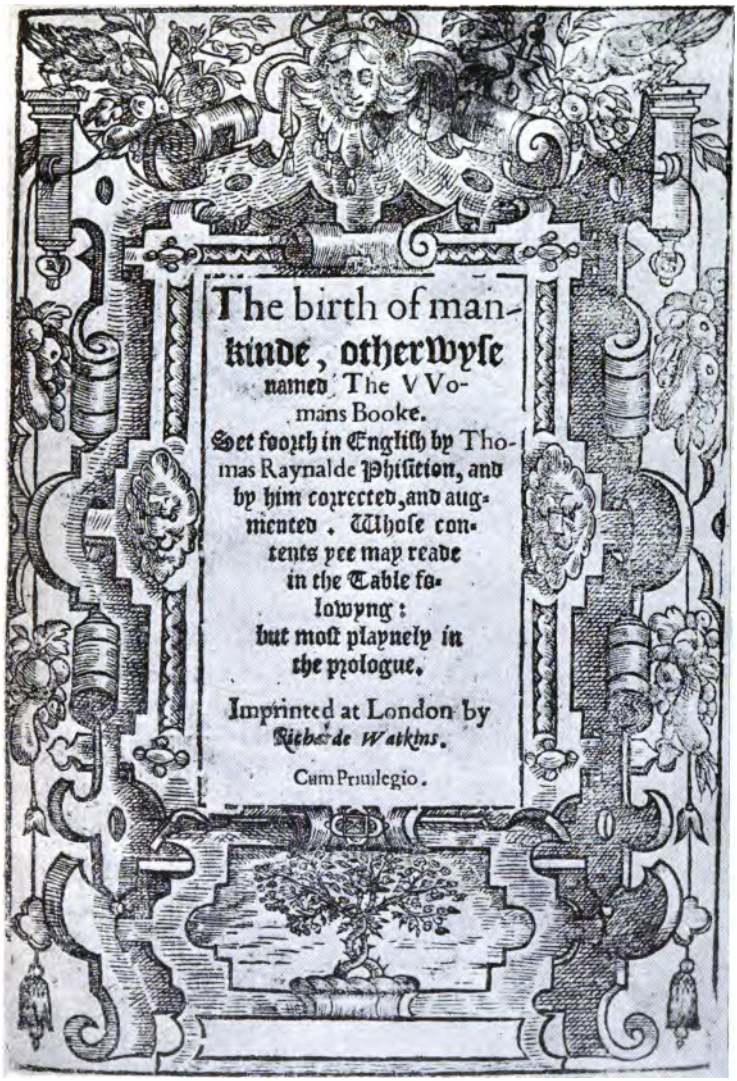


FIG. 12.

Title Page of the 1598 Edition.

[*Face page* 260.

L be it ſome *Ariſtarchus* may perhappes finde ſome lacke of faythfulnes and diligence in this worke: yet there is none ſo froward de to deny, but that there is ſome fruite and profite to bee founde therein, ſeeing that it commeth now abroade much more enlarged and encreaſed, and more diligently corrected, then it was before eyther in the Latine or in the Engliſh. And where before in the other printes, there lacked matter neceſſarie to the opening and declaration of the Figures parteyning to the inner partes: it is now ſo plainely ſet foorth, that the ſimpleſt Mydwife which can read, may both vnderſtand for her better inſtruction, and alſo other women that haue neede of her helpe, the more commoditie. VVherefore my deſire is, that it may be receiued and practiſed of Midwiues, and all other Matrones, with no leſſe ſucceſſe then it is with good wyll and deſire written, to profite, and to do good to other.

FIG. 13.

Preface to the 1598 Edition.

[*Face page* 260.

bookplate, it is seen that it was once the property of F. R. Macdonald, M.D. The margins are wide, and the marginalia are not in black letter, although a large part of the work is so printed. There are practically no MS. notes in it.

It is noteworthy that in this edition the reference to "Boucklersberie" in the passage at the end of the second book has disappeared. It reads as follows: "And as touching the aboue Trochisks and emplasters described here in this place, yee shall finde them alwayes readie made in some Apotheries [*sic*] shoppes in London." This declaration concerning the Trochisks appears in practically the same form in the 1626, 1634, and 1654 editions; there was now no longer any need to specify any one shop where they were to be obtained, and doubtless "Wylliam Normeuyl" of the Three Doves had long since passed to his rest.

Richard Watkins, the printer of the 1598 edition, dwelt in St Paul's Churchyard, and had a shop adjoining to the little Conduit, in Cheap. He had a patent, with James Roberts, for printing almanacks, and he was Warden of the Stationers' Company in 1583. He gave up his right of the sheet or broad-side almanacks to the relief of the poor stationers. In 1598 he seems to have given the license for printing the "Byrth of Mankynde" by assignment to Thomas Adams, who dwelt at the White Lion, St Paul's Churchyard. Adams appears as the printer of the 1604 edition.

It is noteworthy that comparatively few editions of Raynalde's "Byrth of Mankynde" appeared during the long reign of Queen Elizabeth. I have found no trace of any between 1565 and 1598. It is true that in the catalogue of the Radford Library in Manchester there is named an edition of Raynalde's work with the date 1593 in brackets appended; but it seems likely that this is the 1598 edition, for the date appears only in the colophon of that edition, and the 8 is rather like a 3.

(h and i) *The* 1604 *and* 1613 *Editions.*

I have not had an opportunity of examining either the 1604 or the 1613 editions. Of the former there is a copy in the British Museum and one in the Library at Washington, while of the latter the Royal College of Surgeons of London has two copies. Apparently these editions resemble the ones preceding and those immediately following them. The 1604 edition is a black letter quarto of 204 pages and was printed by T. Adams, London (*vide supra*).

(j) *The* 1626 *Edition.*

The edition of 1626 is a small quarto of 204 pages, including those of the Prologue but not those of the Table of Contents. The title-page is very elaborately ornate, but in the copy which I have seen it is roughly printed and somewhat blurred. The arrangement and spelling of the words of the title are as follows:—

THE
BIRTH
OF
Man-kinde;
Otherwise named
The Woman's Booke,
Set forth in English by Thomas
Reynald Physitian, and by him
corrected and aug-
mented
The Contents are in the Table follow-
ing, but chiefly in the Prologue.
LONDON
Printed for A.H. and are to be sold
by James Boler.
1626.

The initial letters are poor; and at the end of the work is simply the word FINIS. This edition is only partly in black letter. The illustrations are arranged in two groups: five plates containing nine figures are placed at the end of the first book and occupy pages 83 to 87; the four plates with the seventeen "Birth Fygures" appear at the end of Chapter IV. of the second book and occupy pages 107 to 110. The first group contains as usual the illustrations of the female generative organs, and of the fœtus and the placenta and membranes; the latter contains the picture of the "Woman's Stoole," and the figures showing the various presentations of the fœtus, including the four twin cases. The copy of the 1626 edition, which is in the Library of the University of Edinburgh, was presented to that Library in 1881 by Dr (now Sir) Dyce Duckworth; he bought it at a sale in the Midlands. Written on the back of the title-page is "1681, Mary Buxton owns (?) this book." Mary Buxton must, I suppose, have been a seventeenth-century midwife, but I do not find her name mentioned in Dr Aveling's work on "English Midwives."

(k) *The* 1634 *Edition.*

Another edition was that of 1634. There are several copies of this edition in England; there is one in the British Museum, one in the Library of the Obstetrical Society of London, and one in the Library of the Royal College of Physicians of London. To the Harveian Librarian of the College of Physicians I am much indebted for the opportunity of examining the last-named copy.

There are 204 pages and 3 preliminary leaves in this edition. The title-page has a woodcut border of an ornate kind, well supplied with devices heraldic in appearance; in it there are figures of Fides, Humilitas, etc. The setting of the title is as follows:—

The Birth
of Man-kinde;
Otherwise Named,
The Womans Booke.
Set forth in English by Thomas
Raynald Physitian, and by him
corrected and augmented.
The contents are in the table fol-
lowing, but chiefly in the Prologue.
London. . . Printed for A.H. and are to be sold
by John Morret, at the two Tuns
in little Britaine.
1634.

The preface is in English. The printing is partly black letter and partly ordinary type, and the marginalia are in ordinary type. In the table of contents the even numbered pages are referred to as pages and the odd numbered ones as folios; there are also directions for the placing of the plates. The interesting passage at the end of the second book is thus rendered in this edition: "And as touching the aboue Troschiskes and emplaisters described here in this place, yee shall finde them alwayes ready made in some Apothecaries shoppes in London." The whole sentence is in black letter except the word "London."

It appears to me from a comparison of this edition with the so-called 1540 edition of the Obstetrical Society of London that the latter is really the same, that it is in fact the 1634 edition. But the MS. title-page has been copied, so it seems to me, from one of the editions printed by Richard Jugge, that namely which is undated, but which may have been published about the year 1564. The transcribed pages at the end may have been copied from the same.

In 1634 Paré's works were translated into English, and

from this time Raynalde's book declined in influence and importance.

(l) *The* 1654 *Edition.*

The 1654 edition is the first that is entirely printed in Roman type; the black letter which was small in quantity in the 1634 edition has disappeared altogether in this. The title-page, also, marks a new departure (Fig. 14): it is destitute of all ornamentation; the wording is different; an enumeration of the contents is given; and there is a reference to the illustrations. A third name is now given to the work, for the title reads: "The Birth of Mankind, otherwise called the Woman's Book, or a Guide for Women, In their Conception, Bearing, and Suckling their Children." It is also entitled "The Fourth Edition Corrected and Augmented"; but, of course, it was rather the twelfth than the fourth, unless indeed we understand the inscription to mean that it was a corrected and augmented impression of the fourth edition. The augmentation would seem to consist mainly of two and a half pages added at the end of the fourth book, numbered 191, 192, and 193; they follow the original pages 191 and 192. These pages contain "directions for the nursing of Children and how to choose a good nurse," which are additions to the statements already given in Chapter II. of the third book. One of them is reproduced in Fig 15.

The work consists of 195 pages and 3 preliminary leaves. There is no colophon. On the title-page is the statement that it was printed in London "for J. L. Henry Hood, Abel Roper, and Richard Tomlins, and are to be sold at their shops in Fleetstreet, and at the Sun and Bible in Pie-Corner, 1654." The table of contents is numbered according to pages and not at all according to folios (*cf.* the 1634 edition, etc.). The anatomical plates occupy pages 81 to 86, and the Birth Fygures pages 105 to 108 (misprinted 118). The paragraph at the end

THE
Birth of Mankind,

Otherwiſe called,

THE WOMANS BOOK.

OR,

A Guide for VVomen,

In their { Conception. Bearing, and Suckling their Children.

CONTAINING

1. *The Anatomie of the Veſſel of Generation.*
2. *The Formation of the Child in the Womb.*
3. *What Hinders Conception; and its Remedies.*
4. *What furthers Conception.*
5. *A Guide for women in Conception.*
6. *Of Miſcarriage in women.*
7. *A guide for women in Labour.*
8. *A guide for women in their lying in.*
9. *Of Nurſing of Children.*

Illuſtrated with Figures.

Tranſlated into Engliſh by *Thomas Reynald*, Doctor of Phyſick.

The Fourth Edition Corrected and Augmented.

LONDON,
Printed for *I. L. Henry Hood*, *Abel Roper*, and *Richard Tomlins*, and are to be ſold at their Shops in *Fleetſtreet*, and at the Sun and Bible in Pie-Corner, 1654.

FIG. 14.

Title Page of the 1654 Edition.

[*Face page* 266.

Directions for the nurſing of Children, and how to chooſe a good nurſe.

I Am of opinion that it is fit for every Mother to nurſe her own Child, becauſe her milk which is nothing but the blood whitened, which nouriſhed the child in the womb and of which the child was conceived, and formed, is fitteſt, and more naturall to the Child, then the milk of a Stranger, and by the womans nurſing her Child, ſhe ſhall be wholly accounted his Mother, but in caſe the Mother be ſick or weak; or hath no milk, or that her Husband will not let her nurſe her Child, then it is neceſſary to look out a nurſe, but moſt men doe know how hard it is to get a good one.

Now in chooſing a Nurſe there is foure things obſervable.

Firſt, concerning her Parentage, ſhe muſt come of good kindred, and honeſt Parentage, that is not ſtained with any vice, for often times we ſee that although the Father and Mother be healthy, and ſtrong, and ready witted, yet oftentimes the Children are weak and ſickly, or elſe fools.

2. Touching her perſon, for her Age, ſhe ſhould be at her full growth, about 22 yeare of Age, and ſhe will continue good untill ſhe be forty years, for after forty

Fig. 15.

Supplementary Matter in the 1654 Edition.

[*Face page* 266.

of Book II. (referring to the Apothecaries of London) is practically identical with that in the 1634 edition, save that the spelling is modernized. Throughout the whole work there is a modernizing of the spelling and of the form of the words, so that this edition resembles closely other books published about the middle of the seventeenth century.

(m) *The* 1676 *Edition.*

A copy of the 1676 edition is in the British Museum; and it is stated in the Catalogue to be a black letter copy. So far as I have been able to discover, this was the last edition to appear. Doubtless the growing popularity of Paré's works, and the appearance of "The Expert Midwife" (translation of Rueff's work), of Culpeper's "Directory for Midwives," of "The Compleat Midwife's Practice," and of P. Chamberlain's "Midwife's Practice," tended slowly to dislodge the "Byrth of Mankynde" from the position of supremacy which it had so long occupied during the sixteenth and seventeenth centuries.

The Various Editions.

I have now passed in review the various editions of the "Byrth of Mankynde," of which I have found any trace. It is possible that there may have been others. For instance, McClintock in his annotations on "Smellie's Midwifery" (vol. i., p. 53, 1876) refers to a 1606 edition which he had seen, but he adds "the 0 here has somewhat the appearance of having been surreptitiously altered with a pen and may have been printed 2." I think it is probable that it was really the 1626 edition that he had to do with. There are, therefore, thirteen known editions, or fourteen if we admit the Radford Library 1593 edition. Of these I have been able to examine nine. I have also seen four other copies, but they were duplications of the 1560, 1564 (?), and 1654 editions. In all I have traced forty copies to their present resting-places either in

public libraries or in the private collections of medical men; and on the following page I give in tabular form the editions and where they are at present to be found.

I gladly take this opportunity of acknowledging my indebtedness to the following gentlemen for facilitating my researches: Drs Cullingworth and J. F. Payne (London); Professor Stephenson (Aberdeen); Drs W. L. Reid, Lawrence Oliphant, and John Ferguson (Glasgow); Dr Underhill, Dr Barbour Simpson, and Mr J. R. N. Macphail (Edinburgh); and the Librarian of the Army Medical Museum and Library, Washington, U.S.A.

[*Addendum.*—I have recently (2nd October 1906) had an opportunity of examining a copy of the 1604 edition of Raynalde's *Byrth of Mankynde*. It belongs to Professor H. R. Spencer, to whose kindness I am indebted for the privilege of inspecting it. It is very similar in all respects to the edition of 1598. The ornamental title-page is exactly the same, with the exception of a few differences in the type of the title. At the foot of the inscription is "Imprinted at London for Thomas Adams," instead of "Imprinted at London by Richarde Watkins," which appears in the 1598 edition. The colophon reads "Imprinted at London for Thomas Adams, 1604." The ornamental capital letter (A) at the commencement of the "Aristarchus Preface" is the same as that used in the 1598 edition, but the ornamental margin above it is different, and so is the setting of the type of the Preface itself. There are 204 pages in this edition, and three preliminary leaves; the plates are the same, although two plates of the "Byrthe Fygures" happen to be missing in the copy which I am describing; and the type is mostly black letter. It would seem, therefore, as if Watkins, the printer of the 1598 edition, had assigned the blocks as well as the licence for printing the *Byrth of Mankynde* to Thomas Adams.]

Summary of the Editions of the "Byrth of Mankynde."

Edition of 1540. Jonas's Translation of Rösslin. British Museum.

Edition of 1545. Raynalde's Translation. Royal College of Physicians, London; Hunterian Library, University, Glasgow.

Edition of 1552. Raynalde's Translation. Royal College of Physicians, Edinburgh; and London Obstetrical Society.

Edition of 1560. Raynalde's Translation. Royal College of Surgeons, London; Dr. J. W. Ballantyne, Edinburgh; University of Aberdeen.

Edition of 1565. Raynalde's Translation. British Museum; University of Edinburgh; R. College of Surgeons of London; Washington Library; Hunterian Library, University, Glasgow.

Edition of 1564 (?). Raynalde's Translation. British Museum; University of Glasgow; Royal College of Physicians, London; Dr. J. F. Payne, London.

Edition of 1593 (?). Raynalde's Translation. Radford Library, Manchester.

Edition of 1598. Raynalde's Translation. British Museum; Royal Medico-Chirurgical Society of London; Dr C. E. Underhill; Washington Library; Hunterian Library, University, Glasgow.

Edition of 1604. Raynalde's Translation. British Museum; Washington Library.

Edition of 1613. Raynalde's Translation. Royal College of Surgeons of London (2 copies).

Edition of 1626. Raynalde's Translation. British Museum; University of Edinburgh; London Obstetrical Society; Faculty of Physicians and Surgeons of Glasgow.

Edition of 1634. Raynalde's Translation. British Museum; Royal College of Physicians, London; London Obstetrical Society; Washington Library.

Edition of 1654. Raynalde's Translation. British Museum; Washington Library; Dr W. L. Reid, Glasgow; University of Aberdeen.

Edition of 1676. Raynalde's Translation. British Museum.

MEETING VIII.—JULY 11, 1906.

Dr J. W. BALLANTYNE, *President, in the Chair.*

The following gentleman was elected an Ordinary Fellow of the Society: William Joseph Baird, M.B., Ch.B., Earls Barton, Northamptonshire.

On the recommendation of the Council the following gentlemen were elected Honorary Fellows of the Society: *Emeritus* Professor Sir Alexander Russell Simpson, Edinburgh; Professor Alexander Matvějevĭc Makějev, Moscow; Professor L. M. Bossi, Genoa.

At the conclusion of private business a meeting was held in the Caledonian Station Hotel, in conjunction with the Glasgow Obstetrical and Gynæcological Society.

IRREGULAR MANIFESTATIONS OF PUERPERAL SEPSIS.

By WILLIAM STEPHENSON, M.D., F.R.C.S., Edin., Professor of Midwifery and Diseases of Women, University of Aberdeen.

FOR profitable discussion it is important that the subject be well defined, and the lines on which it is to run clearly

indicated. To effect this is the privilege and the duty of the first speaker.

The responsibility, on the present occasion, has weighed heavily upon me, and has not been lessened by the somewhat vague title given by the Council to the subject for discussion, "The Irregular Manifestations of Puerperal Sepsis." When first I read it I felt puzzled. Taking the words as they stood, there seemed so little to discuss, and yet discussion was what was desired. Gradually I divined that—as in the system of head-lines we now are familiar with—the significance of the words lay more in what they implied than in what they expressed, and that they embodied questions that at the present day are interesting the obstetric mind, and therefore suitable for discussion. It is from this point of view I will handle the subject. The title carries us into the wide field of sepsis and asepsis, mortality and morbidity, but at the same time places a limit to the area to be surveyed.

If I rightly understand, we are met to-day, not as scientists, or specialists, but as practitioners; we are invited to consider the manifestations of puerperal sepsis, not its cause nor the mode of its propagation.

Fortunately for us the clinical field is now illumined by light from the laboratory. The brilliancy of that light at first dazzled our eyes; many shut theirs and would not look up; the minds of others were quite scared, not a few have yet to regain their balance; but the vision is clearing, so that we can discern more accurately, and give to facts their due proportion and perspective.

We owe much to the bacteriologist. By his research we have advanced far on the way of prevention, and to a slight extent in treatment. By his continuous aid our knowledge will become more accurate and effective. But the relation of micro-organisms to the manifestation of morbidity is yet far from being specifically determined. That is our work,

not his. Clinical and bacteriological observation must go on hand in hand. The difficulties are numerous, and our methods of comparing results are unsatisfactory. There are many varieties of organisms; each, no doubt, has a special action, but we cannot yet clinically differentiate one from another; so far as has yet been determined, the manifestations of their presence are similar in all, and "mixed infection" is common. One form may differ from another in virulence, but so also does one and the same germ in different cases. The lesions produced are numerous; a knowledge of the site and character of the local affection is of greater prognostic value than knowing the bacterial form of the infection. The prognosis of a parametritis differs from that of an endometritis.

By the expression, "*irregular* manifestations of sepsis," it was evidently intended that we should place in the background the serious, more or less distinct, and often fatal forms of sepsis, comprehended under the old name of puerperal fever, or the recent and more discriminate terms—septicæmia, sapræmia, and pyemia. In these the indications of infection are early, and so well pronounced that there is no room for doubt as to their nature.

There are other affections of the puerperium far from uncommon. They are less grave, shorter in duration; rarely, if ever, fatal; the septic origin of which for long was not suspected, the idea of infection having been derived from, and associated with, the graver forms only. The argument used to be heard that a given case was not due to infection, because the patient did well for a week or ten days and the temperature was never over 101°. Nowadays it is 100·4° or even 100°. Such cases give rise to anxiety, because of the early manifestation and height of the fever. In from two days to a week the temperature falls to normal, with, in many cases, a pleasing and complete recovery. In others, not unfrequently the delusive relief is dashed after a short time by the recrudescence

of fever, to be prolonged almost indefinitely, and often associated with some distinct local lesion, such as a phlegmon with abscess of pelvic origin, or a phlebitic attack, or phlegmasia dolens, or mania.

Under such circumstances the connection of these affections with sepsis is direct, dating from the first week of the puerperium. We hear, however, of cases of the same nature, where it is honestly believed that, up to the acute attack, the recovery from the confinement was good, that there was no febrile condition, the temperature had been quite *normal*, which, however, many regard to be anything below 100° F. I have seen in consultation such a case of phlegmasia dolens, where the chart bore out the statement made as above regarding the absence of fever. But I was able to point out that, whilst true that the temperature had never risen above 100° it had, during the three weeks, touched the normal line only on three or four occasions; that throughout, until the onset of the acute affection, it had run on what I call the high level, *i.e.*, between 98·4° and 100°, never going lower.

It is a mistake to speak of that as the high *normal* temperature of the puerperium. It is not the *rule*.

Professor Hastings Tweedy, of Dublin, has done good service recently in drawing attention to the question I am approaching. In his opinions I concur generally, but would change the mode of viewing the subject. The disappointing results of the inquiry made by the Committee of the British Medical Association show the futility of trying to form a uniform standard of morbidity on the lines proposed for adoption. Eight days is all too short. Some "irregular manifestations of puerperal sepsis" occur later, and would thus be unrecorded. And again, to record "all cases in which the temperature reaches 100° F. on any two of the bi-daily readings" would be to include some patients who were not suffer-

ing from sepsis. The condition of the breasts alone will occasionally supply such cases.

In forming an opinion of the well-being or illness of a lying-in woman, the whole clinical bearings must be taken into account, but for discussion it is convenient to take each separately. To save time, the statement of the opinions I have formed must be somewhat condensed, and a few points only can be touched upon. As, also, the graver manifestations of sepsis are not included at present, any further remarks will bear chiefly on the question of the so-called "standard of morbidity" that has come into notice.

Words are often obstacles to right thinking. "Morbidity" is one; I do not like it, and would willingly never use it; but as it has been largely adopted it must stand. Any degree of temperature determined upon cannot, by itself, be a standard of *morbidity;* it is merely a standard of febrility. A puerperal woman may suffer from sepsis, and for weeks show only subfebrile temperatures, as in the case already referred to.

If a standard is to be used for reference it should be one of well-being and security, and such we have determined for us by nature. There is abundant proof that the physiological processes going on during the puerperium do not, after the immediate effects of labour have passed off, cause any disturbance in the temperature chart of health. The terms, normal temperature and normal range, so well understood, should be the standard of well-being and security in the puerperium. For facility in reading, the mean of this normal (98·4°) is marked in most charts by a dotted line. Variations above and below this line occur regularly, but the eye readily notes that the observation data run fairly steady in what may be called the *normal level.* This always imparts a feeling of security.

At times the data do not for days reach or but touch the line from below; they all are on a low or *sub-normal level.*

This phase is generally favourable when gradually reached, but if it rapidly occur and be low, or of short duration, it is liable to be followed by a febrile rise.

Another feature in the temperature chart is where all, or the great majority, of the data are on what I would call the *high level*, barely touching the line and rarely crossing it from above at the same time. The higher or evening data are distinctly above 99° or just reach 100°—one or two may rise slightly above the 100°, showing a tendency to rise, but taking the period as a whole, the febrile state, though threatening, has not yet been developed.

So long as it lasts, this high-level feature is a clear indication of insecurity. Whether or not it can be looked upon as evidence of sepsis is an important question. Knowing the almost impossibility of rendering the management of labour completely aseptic, I incline to the opinion that it is more prudent to regard it as such. It certainly should be taken as a caution or danger signal. The thermometric chart alone, however, is not a full index of sepsis—the pulse-rate must be taken along with it. The ratio between the pulse and temperature is the most reliable prognostic aid whenever sepsis is present, but that is a section of the subject time forbids me to open; it, moreover, is well recognised.

The method I have here sketched of appraising the clinical chart differs from that in ordinary use. It will be noted that it takes cognisance of the lower as well as the higher data in the daily observations, and the estimate formed is based not on "any two of the bi-daily readings, where the temperature reaches 100° F. within the first eight days" (B. M. Com.), but on the general character and level on which the temperature is running.

The points I have endeavoured to bring out are—

1. The condition of a patient is indicated in a clinical chart more by the horizontal than the vertical character. A high

temperature is not dangerous unless continued or accompanied by an undue quickening of the pulse in proportion to the temperature.

2. The range in the temperature of the puerperium must be regarded as, or the same as, that in health, subject to like variations and irregularities, but maintaining a fairly equable level in relation to the mean normal line—a depressed temperature is not unfavourable, but must be regarded with caution, as it at times precedes a febrile rise.

3. That mischief brewing can frequently be recognised before a febrile rise by the temperature data lying mainly on a high level between 98·4° and 100°—rarely, if ever, crossing the line from above, at times not reaching it.

Professor Murdoch Cameron (Glasgow) gave notes on a case of long-continued high temperature in the puerperium in which he had got good results from the use of antistreptococcic serum.

Dr Freeland Barbour thanked Prof. Stephenson for his very able opening to their discussion, but he felt with him the great difficulty of drawing the line, because there was risk that the discussion would pass into a discussion of regular septicæmia and its treatment. Instead of being tempted to refer to that, and even to refer to the discussion of morbidity in the puerperium, he wished simply to refer to one point, which he thought should be kept in mind, namely, the possibility of making too much of septicæmia, or, rather, confusing septicæmia and other forms of toxæmia. They must keep in mind that many cases of puerperal disturbance were due to toxæmia due to some other cause and not to septicæmia. He would illustrate that point by a couple of cases he had had in the Maternity Hospital in that quarter. They were cases of puerperal rashes, and he would ask whether they were septicæmic or not? Such cases were very disquieting and suggested

sepsis. The first case was a rash which appeared on the day after labour and suggested scarlet fever. There was no circumoral pallor, no congestion of the fauces, the tongue only slightly coated, and no temperature. The case suggested the possibility of scarlet fever or some febrile condition associated with sepsis. On cross-questioning the patient she said she was liable to a rash like that if she caught a chill after cycling or dancing and it usually lasted three days. There was no rise in temperature or pulse rate in the puerperium. That case might be explained by the large amount of waste products thrown into the system during the muscular activity of labour. So they might have irregular conditions developing in the puerperium which might suggest sepsis and might be due to other causes than septicæmia, rather to toxæmia due to some other cause. For example, eclampsia was a toxæmia which was not septic in origin and yet in which there was frequently a rise of temperature. In the second case the rash came out on the third day after labour. The labour lasted fifteen hours and was completed by forceps. It was a persistent R.O.P. On the third day an erythematous rash appeared on the hypogastrium and had spread over the trunk by the fifth day. At first it was erythematous, but on the fifth day fairy-ring-like patches appeared. A diffuse redness followed, and the temperature was 99°. The rash disappeared on the ninth day. That again was a case of a rash developing from a toxæmia. An interesting point was that the rash did not develop immediately after delivery but at the same time as sepsis would show itself. That suggested a period of incubation which might be explained by the suggestion that it took some time before the toxæmic material accumulated in the system.

Dr Samuel Sloan (Glasgow) said Professor Stephenson's paper was of great value to the general practitioner and to them all. He was pleased to hear that the horizontal line of temperature was considered more important than the vertical. Though

often in severe septicæmia the temperature came down occasionally nearly to normal, even in grave cases. He had been taking temperatures in the mouth, axilla, and rectum in normal individuals and found it difficult to get a temperature of 98·4° in the axilla. In this matter he considered there was too much mechanical and not sufficient scientific investigation. He was inclined to consider that a temperature which kept above the normal line even a very little was septic. In regard to sapræmia and toxæmia, the former was septic, the condition in the blood being a putrid though not a putrefying one. The condition of the breasts always helped him in diagnosis. If they were fully acting, the case did not give him any anxiety, even though the temperature rose and the pulse was quick. Septicæmia was not merely a question of temperature and pulse, because there might be causes for these other than sepsis.

Dr Mac Vie (Chirnside) said it was difficult for the country practitioner, who resided at some distance from his patients, to draw important conclusions from his work. He thought with Dr Barbour that too much was made of septicæmia, and it was a pity they could not distinguish some forms which were undoubtedly toxic and not septic. They might have a temperature of 103°, but after castor oil and a large enema it came down and the patient was soon going about. That was not a case of septicæmia, and was probably due to inattention to the bowels preceding labour. In regard to the alteration of diet in the puerperium, he had kept a patient on her ordinary food, breakfast of ham and egg and fish, and claret and champagne to lunch and dinner as the case might be. She had large breasts, but never had a rise of temperature. They might conclude from that that the usual departure from the ordinary rules of life was something that upset the patient's system a little. The digestive faculties had not completely accommodated themselves to milk diet and so put themselves into a

condition more likely for the manifestations of toxic conditions. At least, he had lately made very little alteration in the diet before or after labour.

He always suspected a high rise of temperature to mean a serious case; but he thought the main thing was to try to determine the form of febrile disturbance and its cause, and not to set everything down to septicæmia.

Dr C. C. Easterbrook said insanity, as they knew, was one of the most distressing complications of the puerperium. It was sometimes stated to be less common now, but he was not aware of any statistics to prove this. He had always been interested in the subject, and from personal experience he divided the cases into two groups. First was septic puerperal insanity. This came on rapidly after confinement within a week or fortnight usually, and consisted in puerperal sepsis, with high temperature and pulse, *plus* insanity, which was of the nature of a delirium—an insane delirium or a marked mental confusion. These cases were treated on the usual lines, the uterus being cleared out, and curetted if necessary. The septicæmic cases were the worst, and he had found antistreptococcus serum not successful.

The second class of case occurred usually later in the puerperium, and there was no distinct evidence of sepsis. These patients appeared to be suffering from ordinary attacks of insanity. Perhaps the puerperal state in such cases acted as a physiological crisis, in the same way as puberty and adolescence were thought to act, producing a state of exhaustion in an excitable nervous system; for in such cases there was always a distinct neurotic constitution present. But he had often thought that such cases might quite possibly be toxic as distinguished from septic. He wondered if the changes going on in the uterus might explain such cases. They had a large uterus which rapidly involuted within six weeks. In that way a large amount of tissue was suddenly melted down, and some substances

must be formed, perhaps of the nature of albumoses, which might act as toxins and produce these later insanities of the puerperium, which thus would be of the nature of auto-intoxications. He was not aware that the normal physiological chemistry of the blood of the puerperal woman had been properly investigated as yet, with a view to the determination of the presence of substances which might come from the involuting uterus; this would be a most valuable and helpful research in relation to the elucidation of non-septic puerperal insanity. Toxic rashes were not infrequent amongst the insane, in whom constipation was very common, and the rashes were often due to the constipation. The scarlatiniform rash described by Dr Barbour might possibly be explained in that way. He agreed with Dr Barbour in distinguishing septic from toxæmic cases. The general level of temperature was an important point brought out by Dr Stephenson. Amongst the chronic demented insane one usually got a subnormal temperature, 97·4°. When the temperature in such persons rose to 98·4° or 99° F. and remained at that level, he considered that a subfebrile pyrexia for such persons.

Dr C. B. Ker thought that a great number of attacks of so-called scarlatina in the puerperium were probably instances of those rashes described by Dr Barbour and Dr Easterbrook. In severe septic cases going on to a fatal termination, they not infrequently saw all sorts of curious rashes. Generally speaking, that on the trunk was scarlatiniform in variety, but it might incline to be blotchy, especially over the joints. There was a temptation to say those were cases of scarlatina rather than sepsis. His own experience of scarlatina in pregnancy and the puerperium was that such cases ran a natural course and were not especially septic. With regard to the question of rashes, there was no doubt constipation was an important factor in many cases. He had noticed that when the constipation was relieved by salts or an enema, the rash appeared. They were often scarlatiniform, or an erythema multiforme, or

circinate erythema. He had found in the typhoid wards that all sorts of rashes appeared after irrigation of the rectum. One of Dr Barbour's cases appeared on the third day: it might have been due to the effect of an enema. The enema would act by stirring up the contents of the bowel and by clearing away the mucus from the bowel wall. That would lead to increased absorptive power, and he was sure many rashes were due to enemata and to large doses of salts, and not to sepsis. Scarlatiniform rashes sometimes followed operations or a small wound; and it appeared to him that a small tear in the perineum, even microscopic, though the case was not, strictly speaking, septic, might cause a rash to come out in the puerperium. He cordially agreed with Professor Stephenson's remarks on the level of temperature. The normal level was drawn much too high. He never considered a typhoid case was safe until the temperature fell well below the normal line. In regard to puerperal sepsis they had not had so many cases sent in as they expected. He agreed with Professor Cameron that the worst case was where very few local signs could be got; it was an acute poisoning. The milder cases were quite of a different type.

Professor Dickinson (New York) said as a matter of sentiment they could hardly know how strongly the American obstetrician felt who came to the headquarters of English-speaking obstetrics. He was in no sense a bacteriologist, but, as a teacher of obstetrics of twenty years' standing, the discussion reached him from the practical side. He was disappointed that after many years of effort they had not been able to cut down the puerperal death-rate and morbidity more. In America they had a series of researches on the subject, but he was afraid they had to report the same kind of result. It was difficult to teach the practitioner that obstetrics was not medicine but surgery, and that the same care was required as in a surgical operation. Until that was accepted it would be

difficult to exclude sepsis. The important point was the training of the students in the prevention of sepsis. The clean hand was more important than the bichloride solution. They had to teach the details of simple obstetric practice, and to be emphatic on the question of asepsis. They were in despair with regard to treatment. The serum was accepted as a panacea, but it was found that the death-rate in septic cases (40 per cent.) treated by serum was the same as in cases treated without it. The leucocyte-count was to help them, but it had given out. Now they hoped the polynuclear cells would aid them. A leucocytosis of from 18,000 to 20,000 indicated a certain resistive power. There again they were confronted with an improbable diagnosis; and it could not be worked in private practice, and especially in the homes of the poor. The leucocyte-count and the polynuclears were unimportant; it came to be the clean hand and the clean vulva. He thought rashes following operation might be due to a certain amount of paralysis of the bowel and also to the cleaning out of the shielding, protecting mucus from the bowel. In regard to irregular manifestations of sepsis he had had a case of troublesome hæmorrhage in the puerperium. There was no history of "bleeders" in the family. The labour was normal, but ten days later a severe hæmorrhage occurred. This was treated by packing the uterus and vagina. Another hæmorrhage occurred after ten days more, and on the fortieth day another. The patient was extremely collapsed, and unconscious. He had never seen a patient lower. The temperature never went above 101° or below 99°. The patient got injections of saline into the rectum and under the breasts, and the uterus was excised. It contained a small infected ulcer which had opened into an artery in the upper part of the uterus. There was no general sepsis; the condition merely fed a little infection into the system all the time. He thought a great many septic cases were cases of phlebitis. On incising the broad ligaments

he had often found clots present. These thrombi would be suitable media for the growth of organisms.

Dr Lawrence Oliphant (Glasgow) said: In regard to the question of toxæmia and sepsis, he had noticed in maternity work that the temperature might be run up by mental emotion. Many of the maternity cases were unmarried, and mental emotion was an important factor in them. He had seen such a case where the temperature rose to 109°, the pulse was very rapid, and the patient became comatose. (It was due to nervous collapse.) She soon became quite well. In neurotic cases the same kind of thing occurred. He had seen a good many rashes in hospital cases ; some were scarlatiniform but others resembled measles. Dr Russell would never give an absolute opinion, though he was inclined to think they were not scarlatinal. He (Dr Oliphant) was quite confident they were not true cases of scarlatina or measles. He had seen a mild epidemic of undoubted scarlatina in hospital, the porter, two nurses, five women, and one baby were attacked. All were cases of true scarlet fever; there was no sepsis. He had seen a supposed septic case in which there was a rigor on the fourth day, and, on the sixth, pain below the level of the ribs on the right side. A swab was taken from the interior of the uterus and the bacteriologist reported a pure culture of pneumococcus. Two days later a pure pneumonia developed.

Dr J. McNab (Dysart) said, as a general practitioner of twenty years' standing he must have seen five hundred confinements in the last five years. His view was that bacteria flourished on individuals with low resistive power, in gouty, rheumatic, or tubercular diatheses. In such cases retention of parts of membranes or placenta will give rise to elevation of temperature and pulse, while in others not so predisposed no bad symptoms follow. He looked upon the vagina as an aseptic cavity, though that was disproved by bacteriologists. He always ordered douching in a case if the pulse and temperature

went above 100. If there was laceration of the parts or forceps were used, he always ordered douching at the time of delivery. He had seen rashes of a scarlatiniform and urticarial nature come out after operations as well as in puerperal cases. A scarlatiniform rash appeared on a boy within twelve hours after a slight operation. It disappeared in forty-eight hours. He had done a septic mastitis in which the same form of rash appeared within twenty-four hours. In forty-eight hours it had quite disappeared and the patient was quite well in five weeks. There was no question about conditions of the bowel, at least in these cases. The same rash had appeared in a case of herniotomy where no antiseptics were used at all. The question remained, What was the cause of these rashes? He was much pleased with the paper read by Professor Stephenson.

Professor Jardine said it was a pity they had wandered so much. A great many remarks had been directed to pure septicæmia, with which they had nothing to do. He had observed the rashes referred to by Dr Barbour, and he had also seen them in operative work. Most surgeons did. They had been put down to the action of enemata, stirring up the bowel contents. They were difficult to differentiate from scarlet fever. He did not consider them scarlatina unless the throat was involved. In regard to the rise of temperature apart from sepsis, he considered that excitement of any kind would send the temperature up. It occurred the day before a patient went out of hospital or on crying about home. The temperature rose from excitement in these cases, and not from septic absorption. He had seen cases of rise of temperature due to absorption from the bowel in constipation. In a case of induced abortion he had passed the sound, and when the uterus was emptying itself the temperature rose to 105° and the patient had a rigor. The rigors were repeated. He gave large doses of quinine and calomel. A copious movement of the bowels followed, the discharges being very foul, and the temperature was normal

in the morning. That was a case of septic absorption from the bowel.

In all the cases of puerperal insanity he had seen there was a high temperature and sepsis present. In cases which developed later, the septic element might be absent.

He thought work ought to be done on the subject of absorption from the involuting uterus. He had often followed carefully the process of involution by charting it from day to day. In cases of very rapid involution, where the fundus had fallen several inches in one day, he had noticed that the temperature had risen sometimes to 105°. He considered that the rise was due to rapid absorption of the uterine tissue. He had seen several cases where the source of infection had been old abscesses, behind the kidney, behind the cæcum, etc., and one between the stomach and diaphragm, due to an old perforating gastric ulcer. In this case the abscess had burst into the lung and down into the peritoneal cavity.

Dr J. W. Ballantyne, in bringing the discussion to a close, referred to a conference on puerperal morbidity held in London during the early part of the year. This conference he had attended as President of the Edinburgh Obstetrical Society. Perhaps little of great value had been accomplished, but they had at any rate made an attempt towards obtaining a uniform method of stating the statistics of different maternity hospitals. In fixing a standard of puerperal morbidity they excluded the first twenty-four hours, and, in order to include the hospitals which allowed puerperal patients to leave early, they did not count any day after the eighth. During this period, from the second to the eighth day, it was agreed provisionally to regard a temperature of 100° or more (taken in the mouth) on three consecutive bi-daily readings, with a pulse of 100 or more, as the index of puerperal morbidity. This plan might be used to decide whether a case were one of the irregular manifestions of sepsis or not. The scheme ought at any rate to be tried in the

various maternity hospitals. He had tried it in his own quarter at the Edinburgh Royal Maternity, and had found that the morbidity so calculated worked out at 4 per cent. The discussion that afternoon had not always been restricted to the consideration of what were commonly regarded as the irregular manifestations of sepsis; but there had been many interesting expressions of opinion. He (Dr Ballantyne) would refer very briefly to a few instances of what he regarded as probable cases of irregular puerperal sepsis. There was a case he had seen some years ago of erythema over the joints (elbows, knees, wrists, buttocks, etc.) in a primipara who had a tedious "dry" labour, following premature rupture of the membranes; she developed phlegmasia alba dolens later in the puerperium. There was another case which he had seen in hospital of puerperal mania after placenta prævia; the patient was removed to an asylum, where she died six weeks later; at the post-mortem a small pocket of pus was found in the wall of the uterus at one spot near the fundus. There was a third case, which he had seen in consultation, of secondary hæmorrhage about the eleventh day of the puerperium; the recovery up to that date had been uninterrupted, then hæmorrhage began, and notwithstanding various measures resulted fatally. It had seemed to him that that case might have been septic in origin. There was no other explanation. Then there were cases of which he had seen several, in which the diagnosis rested between influenza in the puerperium and irregular puerperal sepsis. Undoubtedly, the new-born infant was occasionally the subject of septic infection, the umbilical vessels serving as the means of ingress for the septic poison. A breaking-down blood-clot could be occasionally found in the umbilical vein near the liver. When the new-born infant thus became the subject of sepsis, the mother might become infected by her own child, as, for instance, in cases of mammary abscess.

Professor Stephenson, in reply, said he thanked Dr Cameron

for showing a most interesting chart. If the temperature as a rule was alarmingly high, the pulse-rate was uncommonly good. With a temperature of 102° it was under 100. Again, even with a temperature of 105° the pulse was only 120; and when the temperature stood at 104·2° it was only 112. In a case of that kind his mind was not anxious at all. As long as the pulse kept down, the virulence was not great. Such cases were long protracted, but with so favourable a ratio of pulse and temperature he would not have used the serum at all. He would not detain the members by referring further to the many interesting points noted in the discussion.

The Fellows of the two Societies subsequently dined together in the Caledonian Station Hotel.

INDEX.

B

Ballantyne, Dr J. W., reads papers, 66, 232; shows specimens, 59, 79, 104; on Dr Barbour's and Dr Watson's papers, 48; on Dr Barbour Simpson's papers, 64, 91; on Dr Fothergill's paper, 88; on Dr Porter's paper, 102; on Mr Scott Carmichael's papers, 114, 185; on Dr Fordyce's paper, 119; on Dr Ferguson's paper, 132; on Dr Haultain's paper, 146; on Professor Jardine's papers, 167; on Dr Barbour's papers, 177; on irregular puerperal sepsis, 285; replies to discussion, 77.

Barbour, Dr Freeland, reads papers, 22, 171, 173; shows specimens, 79, 105, 188; on Dr Watson's paper, 46; on the President's paper, 76; on Dr Fothergill's paper, 86; on Dr Barbour Simpson's paper, 91; on Mr Scott Carmichael's paper, 114; on Dr Fordyce's paper, 119; on Dr Ferguson's paper, 132; on Dr Haultain's paper, 146; on Professor Jardine's papers, 168; on Professor Kynoch's paper, 194; on Professor Sir Halliday Croom's paper, 196; on irregular puerperal sepsis, 276.

Bicornuate Uterus, pregnancy in, 115.

Brewis, Dr N. T., valedictory address, 2; shows specimens, 55, 119.

Broad ligament cyst with twisted pedicle and blood-extravasation into cellular tissue along left ovarian vein, 171.

"Byrth of Mankynde," 232.

C

Callender, Dr, reads paper, 149.

Cameron, Professor Murdoch, on irregular puerperal sepsis, 276.

Campbell, Dr Malcolm, on Dr Barbour Simpson's paper, 65; on Professor Sir Halliday Croom's paper, 198.

Carmichael, Mr Scott, reads papers, 105, 178; on Dr Barbour Simpson's paper, 64; on Dr Ferguson's paper 133; on Professor Sir Halliday Croom's paper, 197; replies to discussion, 115.

Chiene, Mr George, on Dr Barbour Simpson's paper, 91.

Church, Dr, on Professor Sir Halliday Croom's paper, 198.

Clinical Gynæcology, position of, in medical curriculum, 50.

Croom, Professor Sir Halliday, reads papers, 194, 200; on Professor Kynoch's paper, 194; replies to discussion, 199.

D

Darling, Dr Brown, on Dr Ferguson's paper, 134; on Professor Sir Halliday Croom's paper, 198.

Dewar, Dr, on Professor Sir Halliday Croom's paper, 198.
Dickinson, Professor, on irregular puerperal sepsis, 281.

E

Easterbrook, Dr C. C., on irregular puerperal sepsis, 279.
Eclampsia during pregnancy, with death from suppression of urine and infarction of kidneys, 155.
Eclampsia, followed by melancholia treated with thyroid gland substance, 80.
Eclampsia, with recovery after upwards of two hundred fits, 162.
Ectopic pregnancy, clinical experience of, 134.
Exomphalos with accidental hæmorrhage and delayed second stage, 22.

F

Fellows, election of, Ordinary, 2, 78, 103, 119, 153, 186, 270; Honorary, 270.
Ferguson, Dr Haig, reads paper, 123; shows specimens, 57, 122, 154; on the President's paper, 76; on Dr Haultain's paper, 147; on Professor Jardine's papers, 169; replies to discussion, 134.
Fordyce, Dr Wm., reads paper, 115; on Dr Watson's paper, 48.
Fothergill, Dr W. E., reads paper, 80.

H

Hart, Dr Berry, on Dr Watson's paper, 46; on Dr Barbour Simpson's paper, 91; on Dr Porter's paper, 102.
Haultain, Dr, reads papers, 50, 134; shows specimens, 104, 121, 153; on Dr Watson's paper, 47; on Dr Ferguson's paper, 133; replies to discussion, 148.
Hernia of Uterine Adnexa, 178.
Heteroplastic ovarian grafting followed by pregnancy and a living child, 194.

I

Inversion of uterns with fatty degeneration of inverted portion, abdominal hysterectomy for, 173.
Intracranial hæmorrhages in the newborn, plea for operative interference in, 105.
Intraperitoneal hæmorrhage during labour, 149.

J

Jardine, Professor, reads papers, 155, 162; shows specimens, 154; on irregular puerperal sepsis, 284; replies to discussion, 170.

K

Ker, Dr Claude, on irregular puerperal sepsis, 280.
Kynoch, Professor, reads paper, 190; shows specimens, 186.

L

Lackie, Dr, shows specimens, 58, 189.
Liquor Amnii, withdrawal of, a cause of fœtal death and placental changes, 25.

M

Macdonald, Dr Angus, on Dr Barbour Simpson's paper, 64; on Professor Sir Halliday Croom's paper, 199.
Macnab, Dr, on irregular puerperal sepsis, 283.
MacVie, Dr, on irregular puerperal sepsis, 278.
Malignant endocarditis during pregnancy, 200.
Metritis and Salpingitis, acute puerperal, hysterectomy for, 123.

N

Nicholson, Dr Oliphant, reads paper, 213; on the President's paper, 76; on Dr Fothergill's paper, 87.

O

Office-bearers, election of, 2.
Oliphant, Dr Lawrence, on irregular puerperal sepsis, 283.

P

Paterson, Dr Keppie, on Dr Fothergill's paper, 88; on Professor Jardine's papers, 170; on Professor Sir Halliday Croom's paper, 196.
Physiological changes in the maternal organism during pregnancy, 213.
Porter, Dr F., reads paper, 92; on Dr Fothergill's paper, 86; replies to discussion, 103.
Post-partem Ovariotomy, 190.
Pudendal myxoma, 60.
Puerperal Sepsis, irregular manifestations of, 270.
Pyuria in the Female, 92.

R

Raynalde's "Byrth of Mankynde," 232.
Ritchie, Dr James, on the President's paper, 76; on Dr Fothergill's paper, 88; on Dr Barbour Simpson's paper, 91; on Dr Porter's paper, 102; on Professor Jardine's papers, 168; on Professor Sir Halliday Croom's paper, 198.

S

Simpson, *Emeritus* Professor Sir A., on Dr Watson's paper, 45.
Simpson, Dr G. Barbour, reads papers, 60, 88; on the President's paper, 76; on Professor Sir Halliday Croom's paper, 199; replies to discussion, 65.
Sloan, Dr Samuel, on irregular puerperal sepsis, 277.
Specimens, exhibition of, 55, 79, 103, 119, 153, 186.
Spinal tapping, hydrocephalic fœtus delivered by, 66.
Stephenson, Professor, introduces discussion on irregular manifestations of puerperal sepsis, 270; replies to discussion, 286.
Stereoscope, in the teaching of obstetrics and gynæcology, 88.

T

Taylor, Dr Macrae, on Professor Sir Halliday Croom's paper, 199.
Treasurer, annual statement of, 1.

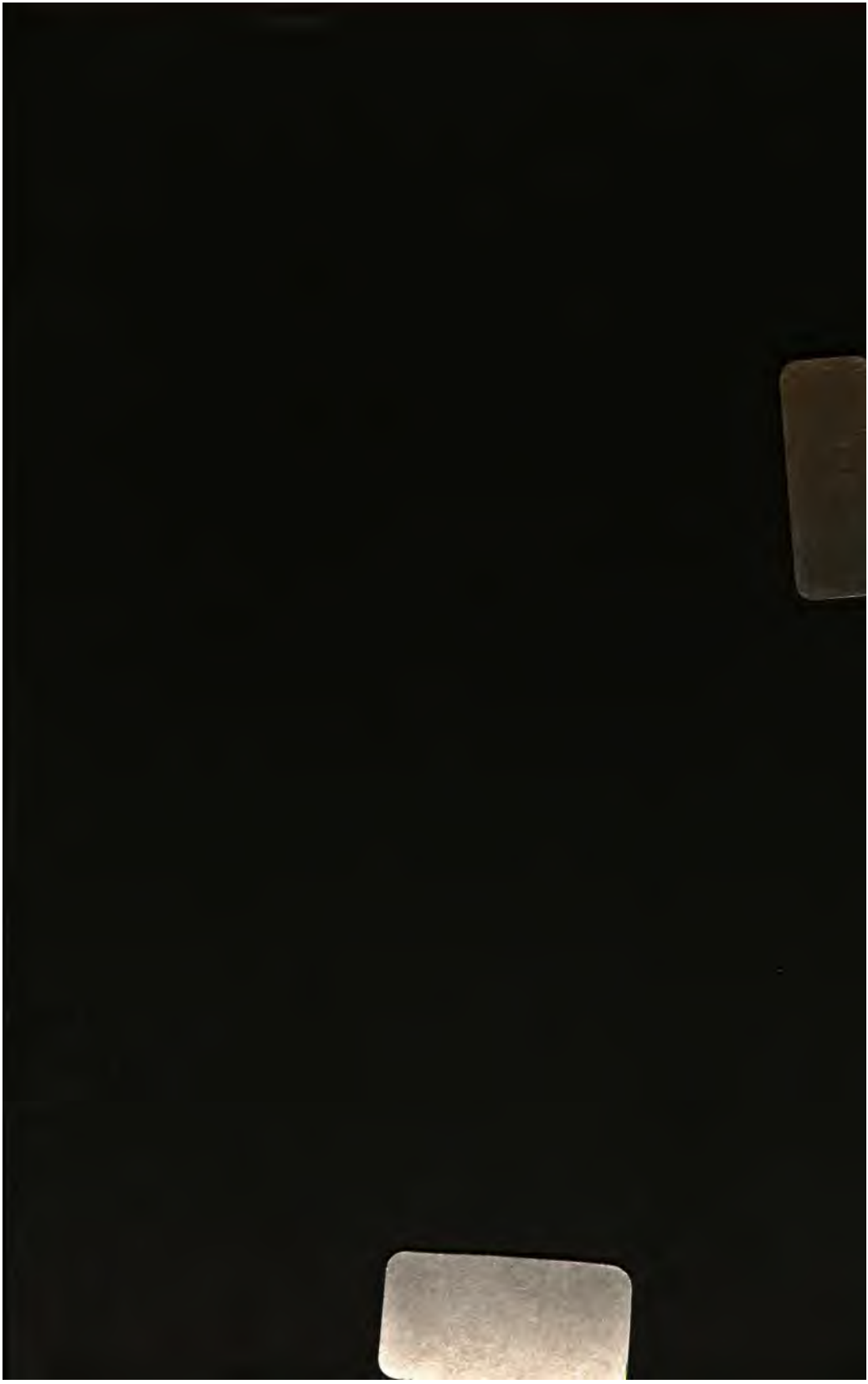
V

Valedictory address, 2.

W

Watson, Dr B. P., reads paper, 25; replies to discussion, 50.
Wood, Dr Thomas, shows specimen, 103; on the President's paper, 77.

915

PRINTED BY
OLIVER AND BOYD,
EDINBURGH.

1 gal
342